

CHAPTER 10: Windowing and Terminal Interfaces

SCD
2.3

Windowing and Terminal Interface

This chapter covers the Xlib, Xext, Xt, Openlook, and Motif interfaces.

Windowing and Terminal Interfaces Changes

The following are changes to the *System V ABI*, the *System V ABI SPARC Processor Supplement*, and the *System V Interface Definition* as reported to SPARC International.

The X Library

This chapter identifies binary interfaces for libX, which are defined in *The X Window System (Third Edition)* by Robert W. Scheifler and James Gettys (Digital Press, ISBN 1-55558-088-2).

In addition, all SCD 2.3 systems will support the mechanisms and conventions as specified in the *Inter-Client Communications Convention Manual (ICCCM)* in *The X Window System (Third Edition)* by Robert W. Scheifler and James Gettys (Digital Press, ISBN 1-55558-088-2).

The interfaces listed below in Table 10-1 have been included in SCD 2.3 because they are REQUIRED to be present on all compliant systems, in the dynamic library `/usr/lib/libX11.so.5`. Table 10-2 contains the exported data which are also REQUIRED to be present in `/usr/lib/libX11.so.5`. The format of these entries is: data[size].

Conformant systems are also REQUIRED to have `/usr/lib/libX11.so.4` in order to support SPARC applications written to conform to versions 2.0 and 2.1 of the *SPARC Compliance Definition*. Since the X Version 11, Release 5 specification is a proper superset of the X Version 11, Release 4 specification, system vendors can provide this support by simply making a link to `/usr/lib/libX11.so.5` for the file `/usr/lib/libX11.so.4` as part of the system installation process. If an application executable references `/usr/lib/libX11.so.4` and does not reference `/usr/lib/libX11.so.5`, the application may not use any functionality defined by X11R5 but not defined by X11R4. See the *SPARC Compliance Definition 2.1* for a list of X11R4 components. The file name, `/usr/lib/libX11.so.4`, is deprecated effective November 1st, 1993; this filename may go away as early as November 1st, 1996 so new applications should not rely on its existence.

Figures 10-1 through 10-7 detail the manifest constants and visible data structures associated with the X library.

Table 10-1: Contents of libX (1 of 4)

XActivateScreenSaver	XcmsAddFunctionSet	XcmsScreenWhitePointOfCCC
XAddExtension	XcmsAllocColor	XcmsSetCompressionProc
XAddHost	XcmsAllocNamedColor	XcmsSetWhiteAdjustProc
XAddHosts	XcmsCCCOFColormap	XcmsSetWhitePoint
XAddPixel	XcmsCIELabClipab	XcmsStoreColor
XAddToExtensionList	XcmsCIELabClipL	XcmsStoreColors
XAddToSaveSet	XcmsCIELabClipLab	XcmsTekHVCClipC
XAllocClassHint	XcmsCIELabQueryMaxC	XcmsTekHVCClipV
XAllocColor	XcmsCIELabQueryMaxL	XcmsTekHVCClipVC
XAllocColorCells	XcmsCIELabQueryMaxLC	XcmsTekHVCQueryMaxC
XAllocColorPlanes	XcmsCIELabQueryMinL	XcmsTekHVCQueryMaxV
XAllocIconSize	XcmsCIELabToCIEXYZ	XcmsTekHVCQueryMaxVC
XAllocNamedColor	XcmsCIELabWhiteShiftColors	XcmsTekHVCQueryMaxVSamples
XAllocSizeHints	XcmsCIELuvClipL	XcmsTekHVCQueryMinV
XAllocStandardColormap	XcmsCIELuvClipLuv	XcmsTekHVCToCIEuvY
XAllocWMHints	XcmsCIELuvClipuv	XcmsTekHVCWhiteShiftColors
XAllowEvents	XcmsCIELuvQueryMaxC	XcmsVisualOfCCC
XAllPlanes	XcmsCIELuvQueryMaxL	XConfigureWindow
XAutoRepeatOff	XcmsCIELuvQueryMaxLC	XConnectionNumber
XAutoRepeatOn	XcmsCIELuvQueryMinL	XContextDependentDrawing
XBaseFontNameListOfFontSet	XcmsCIELuvToCIEuvY	XConvertSelection
XBell	XcmsCIELuvWhiteShiftColors	XCopYArea
XBitmapBitOrder	XcmsCIEuvYToCIELuv	XCopYColormapAndFree
XBitmapPad	XcmsCIEuvYToCIEXYZ	XCopYGC
XBitmapUnit	XcmsCIEuvYToTekHVC	XCopYPlane
XBlackPixel	XcmsCIExyYToCIEXYZ	XCreateBitmapFromData
XBlackPixelOfScreen	XcmsCIEXYZToCIELab	XCreateColormap
XCellsOfScreen	XcmsCIEXYZToCIEuvY	XCreateFontCursor
XChangeActivePointerGrab	XcmsCIEXYZToCIExyY	XCreateFontSet
XChangeGC	XcmsCIEXYZToRGBi	XCreateGC
XChangeKeyboardControl	XcmsClientWhitePointOfCCC	XCreateGlyphCursor
XChangeKeyboardMapping	XcmsConvertColors	XCreateIC
XChangePointerControl	XcmsCreateCCC	XCreateImage
XChangeProperty	XcmsDefaultCCC	XCreatePixmap
XChangeSaveSet	XcmsDisplayOfCCC	XCreatePixmapCursor
XChangeWindowAttributes	XcmsFormatOfPrefix	XCreatePixmapFromBitmapData
XCheckIfEvent	XcmsFreeCCC	XCreateRegion
XCheckMaskEvent	XcmsLookupColor	XCreateSimpleWindow
XCheckTypedEvent	XcmsPrefixOfFormat	XCreateWindow
XCheckTypedWindowEvent	XcmsQueryBlack	XDefaultColormap
XCheckWindowEvent	XcmsQueryBlue	XDefaultColormapOfScreen
XCirculateSubwindows	XcmsQueryColor	XDefaultDepth
XCirculateSubwindowsDown	XcmsQueryColors	XDefaultDepthOfScreen
XCirculateSubwindowsUp	XcmsQueryGreen	XDefaultGC
XClearArea	XcmsQueryRed	XDefaultGCOfScreen
XClearWindow	XcmsQueryWhite	XDefaultRootWindow
XClipBox	XcmsRGBiToCIEXYZ	XDefaultScreen
XCloseDisplay	XcmsRGBiToRGB	XDefaultScreenOfDisplay
XCloseIM	XcmsRGBToRGBi	XDefaultString
XcmsAddColorSpace	XcmsScreenNumberOfCCC	XDefaultVisual

Table 10-1. Contents of libX (2 of 4)

XDefaultVisualOfScreen	XSetEventToWire	XGetGeometry
XDefineCursor	XSetFlushGC	XGetIconName
XDeleteContext	XSetFreeFont	XGetIconSizes
XDeleteModifiermapEntry	XSetFreeGC	XGetICValues
XDeleteProperty	XSetPrintErrorValues	XGetImage
XDestroyIC	XSetWireToError	XGetIMValues
XDestroyImage	XSetWireToEvent	XGetInputFocus
XDestroyRegion	XEventMaskOfScreen	XGetKeyboardControl
XDestroySubwindows	XEventsQueued	XGetKeyboardMapping
XDestroyWindow	XExtentsOfFontSet	XGetModifierMapping
XDisableAccessControl	XFetchBuffer	XGetMotionEvents
XDisplayCells	XFetchBytes	XGetNormalHints
XDisplayHeight	XFetchName	XGetPixel
XDisplayHeightMM	XFillArc	XGetPointerControl
XDisplayKeycodes	XFillArcs	XGetPointerMapping
XDisplayMotionBufferSize	XFillPolygon	XGetRGBColormaps
XDisplayName	XFillRectangle	XGetScreenSaver
XDisplayOfIM	XFillRectangles	XGetSelectionOwner
XDisplayOfScreen	XFilterEvent	XGetSizeHints
XDisplayPlanes	XFindContext	XGetStandardColormap
XDisplayString	XFindOnExtensionList	XGetSubImage
XDisplayWidth	XFlush	XGetTextProperty
XDisplayWidthMM	XFlushGC	XGetTransientForHint
XDoesBackingStore	XFontsOfFontSet	XGetVisualInfo
XDoesSaveUnders	XForceScreenSaver	XGetWindowAttributes
XDrawArc	XFree	XGetWindowProperty
XDrawArcs	XFreeColormap	XGetWMClientMachine
XDrawImageString	XFreeColors	XGetWMColormapWindows
XDrawImageString16	XFreeCursor	XGetWMHints
XDrawLine	XFreeExtensionList	XGetWMIconName
XDrawLines	XFreeFont	XGetWMName
XDrawPoint	XFreeFontInfo	XGetWMNormalHints
XDrawPoints	XFreeFontNames	XGetWMProtocols
XDrawRectangle	XFreeFontPath	XGetWMSizeHints
XDrawRectangles	XFreeFontSet	XGrabButton
XDrawSegments	XFreeGC	XGrabKey
XDrawString	XFreeModifiermap	XGrabKeyboard
XDrawString16	XFreePixmap	XGrabPointer
XDrawText	XFreeStringList	XGrabServer
XDrawText16	XGContextFromGC	XHeightMMOfScreen
XHeadOfExtensionList	XGeometry	XHeightOfScreen
XEmptyRegion	XGetAtomName	XIconifyWindow
XEnableAccessControl	XGetClassHint	XIfEvent
XEqualRegion	XGetCommand	XImageByteOrder
XSetCloseDisplay	XGetDefault	XIMOfIC
XSetCopyGC	XGetErrorDatabaseText	XInitExtension
XSetCreateFont	XGetErrorText	XInsertModifiermapEntry
XSetCreateGC	XGetFontPath	XInstallColormap
XSetError	XGetFontProperty	XInternAtom
XSetErrorString	XGetGCValues	XIntersectRegion

Table 10-1. Contents of libX (3 of 4)

XKeyCodeToKeysym	XParseGeometry	XrmInitialize
XKeysymToKeyCode	XPeekEvent	XrmLocaleOfDatabase
XKeysymToString	XPeekIfEvent	XrmMergeDatabases
XKillClient	XPending	XrmParseCommand
XLastKnownRequestProcessed	XpixmapAlloc	XrmPermStringToQuark
XListDepths	XPlanesOfScreen	XrmPutFileDatabase
XListExtensions	XPointInRegion	XrmPutLineResource
XListFonts	XPolygonRegion	XrmPutResource
XListFontsWithInfo	XProtocolRevision	XrmPutStringResource
XListHosts	XProtocolVersion	XrmQGetResource
XListInstalledColormaps	XPutBackEvent	XrmQGetSearchList
XListPixmapFormats	XPutImage	XrmQGetSearchResource
XListProperties	XPutPixel	XrmQPutResource
XLoadFont	XQLength	XrmQPutStringResource
XLoadQueryFont	XQueryBestCursor	XrmQuarkToString
XLocaleOfFontSet	XQueryBestSize	XrmSetDatabase
XLocaleOfIM	XQueryBestStipple	XrmStringToBindingQuarkList
XLookupColor	XQueryBestTile	XrmStringToQuark
XLookupKeysym	XQueryColor	XrmStringToQuarkList
XLookupString	XQueryColors	XrmUniqueQuark
XLowerWindow	XQueryExtension	XRootWindow
XMapRaised	XQueryFont	XRootWindowOfScreen
XMapSubwindows	XQueryKeymap	XRotateBuffers
XMapWindow	XQueryPointer	XRotateWindowProperties
XMaskEvent	XQueryTextExtents	XSaveContext
XMatchVisualInfo	XQueryTextExtents16	XScreenCount
XMaxCmapsOfScreen	XQueryTree	XScreenNumberOfScreen
XMaxRequestSize	XRaiseWindow	XScreenOfDisplay
XmbDrawImageString	XReadBitmapFile	XScreenResourceString
XmbDrawString	XRebindKeysym	XSelectInput
XmbDrawText	XRecolorCursor	XSendEvent
XmbLookupString	XReconfigureWMWindow	XServerVendor
XmbResetIC	XRectInRegion	XSetAccessControl
XmbSetWMProperties	XRefreshKeyboardMapping	XSetAfterFunction
XmbTextEscapement	XRemoveFromSaveSet	XSetArcMode
XmbTextExtents	XRemoveHost	XSetBackground
XmbTextListToTextProperty	XRemoveHosts	XSetClassHint
XmbTextPerCharExtents	XReparentWindow	XSetClipMask
XmbTextPropertyToTextList	XResetScreenSaver	XSetClipOrigin
XMinCmapsOfScreen	XResizeWindow	XSetClipRectangles
XMoveResizeWindow	XResourceManagerString	XSetCloseDownMode
XMoveWindow	XRestackWindows	XSetCommand
XNewModifiermap	XrmCombineDatabase	XSetDashes
XNextEvent	XrmCombineFileDatabase	XSetErrorHandler
XNextRequest	XrmDestroyDatabase	XSetFillRule
XNoOp	XrmEnumerateDatabase	XSetFillStyle
XOffsetRegion	XrmGetDatabase	XSetFont
XOpenDisplay	XrmGetFileDatabase	XSetFontPath
XOpenIM	XrmGetResource	XSetForeground
XParseColor	XrmGetStringDatabase	XSetFunction

Table 10-1. Contents of libX (4 of 4)

XSetGraphicsExposures	XSetWMIconName	XUnmapSubwindows
XSetICFocus	XSetWMName	XUnmapWindow
XSetIconName	XSetWMNormalHints	XUnsetICFocus
XSetIconSizes	XSetWMProperties	XVaCreateNestedList
XSetICValues	XSetWMPprotocols	XVendorRelease
XSetInputFocus	XSetWMSizeHints	XVisualIDFromVisual
XSetIOErrorHandler	XShrinkRegion	XWarpPointer
XSetLineAttributes	XStoreBuffer	XwcDrawImageString
XSetLocaleModifiers	XStoreBytes	XwcDrawString
XSetModifierMapping	XStoreColor	XwcDrawText
XSetNormalHints	XStoreColors	XwcFreeStringList
XSetPlaneMask	XStoreName	XwcLookupString
XSetPointerMapping	XStoreNamedColor	XwcResetIC
XSetRegion	XStringListToTextProperty	XwcTextEscapement
XSetRGBColormaps	XStringToKeysym	XwcTextExtents
XSetScreenSaver	XSubImage	XwcTextListToTextProperty
XSetSelectionOwner	XSubtractRegion	XwcTextPerCharExtents
XSetSizeHints	XSupportsLocale	XwcTextPropertyToTextList
XSetStandardColormap	XSync	XWhitePixel
XSetStandardProperties	XSynchronize	XWhitePixelOfScreen
XSetState	XTextExtents	XWidthMMOfScreen
XSetStipple	XTextExtents16	XWidthOfScreen
XSetSubwindowMode	XTextPropertyToStringList	XWindowEvent
XSetTextProperty	XTextWidth	XWithdrawWindow
XSetTile	XTextWidth16	XWMGeometry
XSetTransientForHint	XTranslateCoordinates	XWriteBitmapFile
XSetTSOrigin	XUndefineCursor	XXorRegion
XSetWindowBackground	XUngrabButton	_XAllocScratch ¹
XSetWindowBackgroundPixmap	XUngrabKey	_XFlush ¹
XSetWindowBorder	XUngrabKeyboard	_XFlushGCCache ¹
XSetWindowBorderPixmap	XUngrabPointer	_XRead ¹
XSetWindowBorderWidth	XUngrabServer	_XReadPad ¹
XSetWindowColormap	XUninstallColormap	_XReply ¹
XSetWMClientMachine	XUnionRectWithRegion	_XSend ¹
XSetWMColormapWindows	XUnionRegion	_XSetLastRequestRead ¹
XSetWMHints	XUnloadFont	1 - New in SCD 2.3

Table 10-2: Exported Data for libX.

```

XcmsCIELabColorSpace[0x18]
XcmsCIELuvColorSpace[0x18]
XcmsCIEuvYColorSpace[0x18]
XcmsCIExyYColorSpace[0x18]
XcmsCIEXYZColorSpace[0x18]
XcmsLinearRGBFunctionSet[0x18]
XcmsRGBColorSpace[0x18]
XcmsRGBiColorSpace[0x18]
XcmsTekHVCCColorSpace[0x18]
XcmsUNDEFINEDColorSpace[0x18]
_Xdebug[0x4]

```

Unsafe Macros

Ordinarily, this document only specifies the system resources available for use by applications on all SPARC compliant systems and makes no comment regarding the programming language or API used by application programmers for building applications. But SPARC International recognizes that many SPARC applications will be written in the C programming language and are likely to use the API specified by the X Consortium. Some of the data structures defined as part of the X ABI, such as struct Display, struct Screen, and struct XImage, are intended to be opaque to the application; that is, the application isn't supposed to contain any knowledge of the size or layout of the data structures.

Some of the macros defined by the X Consortium as part of the X API violate this assumption for opaque data. Below is a table of macros from the X API which are considered by SPARC International to be unsafe; that is, they cause knowledge about the size and/or layout of opaque data structures to be embedded in applications. Embedding this information in an application may prevent the application from being binary compatible with future versions of X which use a different size or layout for these opaque data structures.

Fortunately, each of the unsafe macros has a counterpart in the X library. Table 10-3 below lists each of the unsafe macros and its safe function counterpart from the X library.

Table 10-3: ABI Unsafe Macros

Unsafe Macro	Equivalent X Function
BitmapPad	XBitmapPad
BitmapUnit	XBitmapUnit
BlackPixel	XBlackPixel
BlackPixelOfScreen	XBlackPixelOfScreen
CellsOfScreen	XCellsOfScreen
ClientWhitePointOfCCC	XClientWhitePointOfCCC
ConnectionNumber	XConnectionNumber
DefaultColormap	XDefaultColormap
DefaultColormapOfScreen	XDefaultColormapOfScreen
DefaultDepth	XDefaultDepth
DefaultDepthOfScreen	XDefaultDepthOfScreen
DefaultGC	XDefaultGC
DefaultGCOfScreen	XDefaultGCOfScreen
DefaultRootWindow	XDefaultRootWindow
DefaultScreen	XDefaultScreen
DefaultScreenOfDisplay	XDefaultScreenOfDisplay
DefaultVisual	XDefaultVisual
DefaultVisualOfScreen	XDefaultVisualOfScreen
DisplayCells	XDisplayCells
DisplayHeight	XDisplayHeight
DisplayHeightMM	XDisplayHeightMM
DisplayOfCCC	XDisplayOfCCC

Table 10-3: ABI Unsafe Macros

Unsafe Macro	Equivalent X Function
DisplayOfScreen	XDisplayOfScreen
DisplayPlanes	XDisplayPlanes
DisplayString	XDisplayString
DisplayWidth	XDisplayWidth
DisplayWidthMM	XDisplayWidthMM
DoesBackingStore	XDoesBackingStore
DoesSaveUnders	XDoesSaveUnders
EventMaskOfScreen	XEventMaskOfScreen
HeightMMOfScreen	XHeightMMOfScreen
HeightOfScreen	XHeightOfScreen
ImageByteOrder	XImageByteOrder
LastKnownRequestProcessed	XLastKnownRequestProcessed
MaxCmapsOfScreen	XMaxCmapsOfScreen
MinCmapsOfScreen	XMinCmapsOfScreen
NextRequest	XNextRequest
PlanesOfScreen	XPlanesOfScreen
ProtocolRevision	XProtocolRevision
ProtocolVersion	XProtocolVersion
QLength	XQLength
RootWindow	XRootWindow
RootWindowOfScreen	XRootWindowOfScreen
ScreenCount	XScreenCount
ScreenNumberOfCCC	XScreenNumberOfCCC
ScreenOfDisplay	XScreenOfDisplay
ScreenWhiteOfCCC	XScreenWhiteOfCCC
ServerVendor	XServerVendor
VendorRelease	XVendorRelease
VisualOfCCC	XVisualOfCCC
WhitePixel	XWhitePixel
WhitePixelOfScreen	XWhitePixelOfScreen
WidthMMOfScreen	XWidthMMOfScreen
WidthOfScreen	XWidthOfScreen

Following, are the definitions of manifest constants and data types needed by applications to interface to the Xlib functions listed in Table 10-1.

Though the SPARC Compliance Definition specifies an Application Binary Interface (ABI) rather than an Application Program Interface (API) the manifest constants and data type definitions are broken up into different tables based on which header files a programmer would ordinarily expect to find the definitions for two reasons:

- it makes the document more informative for the programmer who is trying to meet the standard, and
- it is expected that this will make the document easier to edit and review.

The header files these definitions are taken from are

- `<X11/Xlib.h>`,
- `<X11/X.h>`,
- `<X11/Xresource.h>`,
- `<X11/Xutil.h>`,
- `<X11/Xcms.h>`, and
- `<X11/keysymdef.h>`.

All header definitions are based on X, version 11, release 5 from the MIT X Consortium.

X Library Changes

The following are changes to the System V Application Binary Interface, SPARC processor supplement, Third Edition.

#	Facility	Location	Description
1	<X11/X.h>	psABI	<p>Addition - On page 6-81, in Figure 6-83 add the following constants:</p> <pre> #define X_PROTOCOL 11 #define X_PROTOCOL_REVISION 0 #define ShiftMapIndex 0 #define LockMapIndex 1 #define ControlMapIndex 2 #define Mod1MapIndex 3 #define Mod2MapIndex 4 #define Mod3MapIndex 5 #define Mod4MapIndex 6 #define Mod5MapIndex 7 #define FirstExtensionError 128 #define LastExtensionError 255 #define GCLastBit 22 #define FontChange 255 #define DisableScreenSaver 0 #define DisableScreenInterval 0 #define HostInsert 0 #define HostDelete 1 </pre>
2	<X11/X.h>	psABI	<p>Addition - On page 6-81, in Figure 6-83 add the following type definition: typedef unsigned long Mask;</p>
3	<X11/Xcms.h>	psABI	<p>Addition - On page 6-99, in Figure 6-101 make the following addition:</p> <pre> typedef struct _XcmsCCC { Display *dpy; int screenNumber; Visual *visual; XcmsColor clientWhitePt; XcmsCompressionProc gamutCompProc; XPointer gamutCompClientData; XcmsWhiteAdjustProc whitePtAdjProc; XPointer whitePtAdjClientData; XcmsPerScrnInfo *pPerScrnInfo; } XcmsCCCRec; </pre>
4	<X11/Xcms.h>	psABI	<p>Change - On page 6-99, in Figure 6-101 make the following change:</p> <p>Replace typedef void *XcmsCCC;</p> <p>With typedef struct _XcmsCCC *XcmsCCC;</p>
5	<X11/Xcms.h>	psABI	<p>Addition - On page 6-96, in Figure 6-98 add the following type definitions:</p> <pre> typedef Status (*XcmsWhiteAdjustProc)(); typedef Status (*XcmsScreenInitProc)(); typedef void (*XcmsScreenFreeProc)(); </pre>

X Library Changes (continued)

#	Facility	Location	Description
6	<X11/Xlib.h>	psABI	<p>Change - On page 6-101, in Figure 6-104 make the following changes:</p> <p>Replace typedef void XExtData;</p> <p>With</p> <pre>typedef struct _XExtData { int number; struct _XExtData *next; int (*free_private)(); XPointer private_data; } XExtData;</pre> <p>Replace typedef void XExtCodes;</p> <p>With</p> <pre>typedef struct { int extension; int major_opcode; int first_event; int first_error; } XExtCodes;</pre>
7	<X11/Xlib.h>	psABI	<p>Change - On page 6-102, in Figure 6-105 make the following changes:</p> <p>Replace typedef void *GC;</p> <p>With typedef struct _XGC *GC;</p> <p>Replace typedef struct _dummy Visual;</p> <p>With typedef struct Visual;</p>
8	<X11/Xlib.h>	psABI	<p>Addition - On page 6-102, in Figure 6-105 add the following type definition: typedef struct Depth;</p>
9	<X11/Xlib.h>	psABI	<p>Change - On page 6-103, in Figure 6-106 make the following change:</p> <p>Replace typedef struct _dummy Screen;</p> <p>With typedef struct _Screen Screen;</p>
10	<X11/Xlib.h>	psABI	<p>Change - On page 6-107, in Figure 6-110 make the following change:</p> <p>Replace typedef struct _dummy Display;</p> <p>With typedef struct _XDisplay Display;</p>
11	<X11/Xlib.h>	psABI	<p>Change - On page 6-121, in Figure 6-124 make the following change:</p> <p>Replace typedef struct _dummy XFontSet;</p> <p>With typedef struct _XFontSet *XFontSet;</p>
12	<X11/Xresource.h>	psABI	<p>Addition - On page 6-127, in Figure 6-130 add the following constant:</p> <pre>#define NULLSTRING ((XrmString) 0)</pre>
13	<X11/Xresource.h>	psABI	<p>Addition - On page 6-127, in Figure 6-130 add the following type definitions:</p> <pre>typedef char *XrmString; typedef struct _XrmHashBucketRec XrmHashBucket; typedef struct _XrmHashBucketRec *XrmDatabase;</pre>

X Library Changes (continued)

#	Facility	Location	Description
14	<X11/Xlib.h>	psABI	<p>Change - On page 6-122, in Figure 6-125 make the following changes:</p> <p>Replace</p> <pre>typedef struct { char *chars; int nchars; int delta; XFontSet *font_set; } XmbTextItem;</pre> <p>With</p> <pre>typedef struct { char *chars; int nchars; int delta; XFontSet font_set; } XmbTextItem;</pre> <p>Replace typedef void *XIM;</p> <p>With typedef struct _XIM *XIM;</p> <p>Replace typedef void *XIC;</p> <p>With typedef struct _XIC *XIC;</p> <p>Replace typedef void *XIC;</p> <p>With typedef struct _XIC *XIC;</p>
15	<X11/Xutil.h>	psABI	<p>Change - On page 6-132, in Figure 6-135 make the following changes:</p> <p>Replace typedef void *Region;</p> <p>With: typedef struct _XRegion *Region;</p>

Figure 10-1: Manifest Constants from <X11/keysymdef.h>

```

#define XK_VoidSymbol          0xFFFFF          /* Alias for mode_switch */
#define XK_Num_Lock            0xFF7F

/* TTY Functions */
#define XK_BackSpace           0xFF08
#define XK_Tab                 0xFF09
#define XK_Linefeed            0xFF0A
#define XK_Clear               0xFF0B
#define XK_Return              0xFF0D
#define XK_Pause               0xFF13
#define XK_Scroll_Lock         0xFF14
#define XK_Escape              0xFF1B
#define XK_Delete              0xFFFF

/* International & multi-key character */
#define XK_Multi_key           0xFF20

/* Japanese keyboard support */
#define XK_Kanji               0xFF21
#define XK_Muhenkan            0xFF22
#define XK_Henkan_Mode         0xFF23
#define XK_Henkan              0xFF23
#define XK_Romaji              0xFF24
#define XK_Hiragana            0xFF25
#define XK_Katakana            0xFF26
#define XK_Hiragana_Katakana   0xFF27
#define XK_Zenkaku             0xFF28
#define XK_Hankaku             0xFF29
#define XK_Zenkaku_Hankaku     0xFF2A
#define XK_Touroku             0xFF2B
#define XK_Massyu              0xFF2C
#define XK_Kana_Lock           0xFF2D
#define XK_Kana_Shift          0xFF2E
#define XK_Eisu_Shift          0xFF2F
#define XK_Eisu_toggle         0xFF30

/* Cursor control & motion */
#define XK_Home                0xFF50
#define XK_Left                0xFF51
#define XK_Up                  0xFF52
#define XK_Right               0xFF53
#define XK_Down                0xFF54
#define XK_Prior               0xFF55
#define XK_Next                0xFF56
#define XK_End                 0xFF57
#define XK_Begin               0xFF58

/* Misc Functions */
#define XK_Select               0xFF60
#define XK_Print                0xFF61
#define XK_Execute              0xFF62
#define XK_Insert              0xFF63
#define XK_Undo                 0xFF65
#define XK_Redo                 0xFF66
#define XK_Menu                 0xFF67
#define XK_Find                 0xFF68
#define XK_Cancel               0xFF69
#define XK_Help                 0xFF6A
#define XK_Break                0xFF6B
#define XK_Mode_switch          0xFF7E
#define XK_script_switch        0xFF7E

/* Keypad Functions */
#define XK_KP_Space             0xFF80
#define XK_KP_Tab               0xFF89
#define XK_KP_Enter             0xFF8D
#define XK_KP_F1                0xFF91
#define XK_KP_F2                0xFF92
#define XK_KP_F3                0xFF93
#define XK_KP_F4                0xFF94
#define XK_KP_Equal             0xFFBD
#define XK_KP_Multiply          0xFFAA
#define XK_KP_Add               0xFFAB
#define XK_KP_Separator         0xFFAC
#define XK_KP_Subtract          0xFFAD
#define XK_KP_Decimal           0xFFAE
#define XK_KP_Divide            0xFFAF
#define XK_KP_0                 0xFFB0
#define XK_KP_1                 0xFFB1
#define XK_KP_2                 0xFFB2
#define XK_KP_3                 0xFFB3
#define XK_KP_4                 0xFFB4
#define XK_KP_5                 0xFFB5
#define XK_KP_6                 0xFFB6
#define XK_KP_7                 0xFFB7
#define XK_KP_8                 0xFFB8
#define XK_KP_9                 0xFFB9

/* Auxilliary Functions */
#define XK_F1                   0xFFBE
#define XK_F2                   0xFFBF
#define XK_F3                   0xFFC0
#define XK_F4                   0xFFC1
#define XK_F5                   0xFFC2
#define XK_F6                   0xFFC3
#define XK_F7                   0xFFC4
#define XK_F8                   0xFFC5
#define XK_F9                   0xFFC6
#define XK_F10                  0xFFC7
#define XK_F11                  0xFFC8
#define XK_L1                   0xFFC8
#define XK_F12                  0xFFC9
#define XK_L2                   0xFFC9
#define XK_F13                  0xFFCA
#define XK_L3                   0xFFCA
#define XK_F14                  0xFFCB
#define XK_L4                   0xFFCB
#define XK_F15                  0xFFCC
#define XK_L5                   0xFFCC
#define XK_F16                  0xFFCD
#define XK_L6                   0xFFCD
#define XK_F17                  0xFFCE
#define XK_L7                   0xFFCE
#define XK_F18                  0xFFCF
#define XK_L8                   0xFFCF
#define XK_F19                  0xFFD0
#define XK_L9                   0xFFD0
#define XK_F20                  0xFFD1
#define XK_L10                  0xFFD1
#define XK_F21                  0xFFD2

```

```

#define XK_R1                0xFFD2      #define XK_period            0x02e
#define XK_F22               0xFFD3      #define XK_slash            0x02f
#define XK_R2                0xFFD3      #define XK_0                0x030
#define XK_F23               0xFFD4      #define XK_1                0x031
#define XK_R3                0xFFD4      #define XK_2                0x032
#define XK_F24               0xFFD5      #define XK_3                0x033
#define XK_R4                0xFFD5      #define XK_4                0x034
#define XK_F25               0xFFD6      #define XK_5                0x035
#define XK_R5                0xFFD6      #define XK_6                0x036
#define XK_F26               0xFFD7      #define XK_7                0x037
#define XK_R6                0xFFD7      #define XK_8                0x038
#define XK_F27               0xFFD8      #define XK_9                0x039
#define XK_R7                0xFFD8      #define XK_colon            0x03a
#define XK_F28               0xFFD9      #define XK_semicolon        0x03b
#define XK_R8                0xFFD9      #define XK_less             0x03c
#define XK_F29               0xFFDA      #define XK_equal            0x03d
#define XK_R9                0xFFDA      #define XK_greater          0x03e
#define XK_F30               0xFFDB      #define XK_question         0x03f
#define XK_R10               0xFFDB      #define XK_at               0x040
#define XK_F31               0xFFDC      #define XK_A                0x041
#define XK_R11               0xFFDC      #define XK_B                0x042
#define XK_F32               0xFFDD      #define XK_C                0x043
#define XK_R12               0xFFDD      #define XK_D                0x044
#define XK_F33               0xFFDE      #define XK_                 0x045
#define XK_R13               0xFFDE      #define XK_F                0x046
#define XK_F34               0xFFDF      #define XK_G                0x047
#define XK_R14               0xFFDF      #define XK_H                0x048
#define XK_F35               0xFFE0      #define XK_I                0x049
#define XK_R15               0xFFE0      #define XK_J                0x04a
                                     #define XK_K                0x04b
                                     #define XK_L                0x04c
                                     #define XK_M                0x04d
                                     #define XK_N                0x04e
                                     #define XK_O                0x04f
                                     #define XK_P                0x050
                                     #define XK_Q                0x051
                                     #define XK_R                0x052
                                     #define XK_S                0x053
                                     #define XK_T                0x054
                                     #define XK_U                0x055
                                     #define XK_V                0x056
                                     #define XK_W                0x057
                                     #define XK_X                0x058
                                     #define XK_Y                0x059
                                     #define XK_Z                0x05a
                                     #define XK_bracketleft      0x05b
                                     #define XK_backslash        0x05c
                                     #define XK_bracketright     0x05d
                                     #define XK_asciicircum      0x05e
                                     #define XK_underscore       0x05f
                                     #define XK_grave           0x060
                                     #define XK_a               0x061
                                     #define XK_b               0x062
                                     #define XK_c               0x063
                                     #define XK_d               0x064
                                     #define XK_e               0x065
                                     #define XK_f               0x066
                                     #define XK_g               0x067
                                     #define XK_h               0x068
                                     #define XK_i               0x069
                                     #define XK_j               0x06a
                                     #define XK_k               0x06b
                                     #define XK_l               0x06c
                                     #define XK_m               0x06d
                                     #define XK_n               0x06e

/* Modifiers */
#define XK_Shift_L            0xFFE1
#define XK_Shift_R            0xFFE2
#define XK_Control_L          0xFFE3
#define XK_Control_R          0xFFE4
#define XK_Caps_Lock          0xFFE5
#define XK_Shift_Lock         0xFFE6
#define XK_Meta_L             0xFFE7
#define XK_Meta_R             0xFFE8
#define XK_Alt_L              0xFFE9
#define XK_Alt_R              0xFFEA
#define XK_Super_L            0xFFEB
#define XK_Super_R            0xFFEC
#define XK_Hyper_L            0xFFED
#define XK_Hyper_R            0xFFEE

#endif /* XK_MISCELLANY */

/* Latin 1 Byte 3 = 0 */
#ifndef XK_LATIN1

#define XK_space              0x020
#define XK_exclam             0x021
#define XK_quotedbl           0x022
#define XK_numbersign         0x023
#define XK_dollar             0x024
#define XK_percent            0x025
#define XK_ampersand          0x026
#define XK_apostrophe         0x027
#define XK_parenleft          0x028
#define XK_parenright         0x029
#define XK_asterisk            0x02a
#define XK_plus               0x02b
#define XK_comma              0x02c
#define XK_minus              0x02d

```

```

#define XK_o 0x06f
#define XK_p 0x070
#define XK_q 0x071
#define XK_r 0x072
#define XK_s 0x073
#define XK_t 0x074
#define XK_u 0x075
#define XK_v 0x076
#define XK_w 0x077
#define XK_x 0x078
#define XK_y 0x079
#define XK_z 0x07a
#define XK_braceleft 0x07b
#define XK_bar 0x07c
#define XK_braceright 0x07d
#define XK_asciitilde 0x07e
#define XK_nobreakspace 0x0a0
#define XK_exclamdown 0x0a1
#define XK_cent 0x0a2
#define XK_sterling 0x0a3
#define XK_currency 0x0a4
#define XK_yen 0x0a5
#define XK_brokenbar 0x0a6
#define XK_section 0x0a7
#define XK_diaeresis 0x0a8
#define XK_copyright 0x0a9
#define XK_ordfeminine 0x0aa
#define XK_guillemotleft 0x0ab
#define XK_notsign 0x0ac
#define XK_hyphen 0x0ad
#define XK_registered 0x0ae
#define XK_macron 0x0af
#define XK_degree 0x0b0
#define XK_plusminus 0x0b1
#define XK_twosuperior 0x0b2
#define XK_threesuperior 0x0b3
#define XK_acute 0x0b4
#define XK_mu 0x0b5
#define XK_paragraph 0x0b6
#define XK_periodcentered 0x0b7
#define XK_cedilla 0x0b8
#define XK_onesuperior 0x0b9
#define XK_masculine 0x0ba
#define XK_guillemotright 0x0bb
#define XK_onequarter 0x0bc
#define XK_onehalf 0x0bd
#define XK_threequarters 0x0be
#define XK_questiondown 0x0bf
#define XK_Agrave 0x0c0
#define XK_Aacute 0x0c1
#define XK_Acircumflex 0x0c2
#define XK_Atilde 0x0c3
#define XK_Adiaeresis 0x0c4
#define XK_Aring 0x0c5
#define XK_AE 0x0c6
#define XK_Ccedilla 0x0c7
#define XK_Egrave 0x0c8
#define XK_Eacute 0x0c9
#define XK_Ecircumflex 0x0ca
#define XK_Ediaeresis 0x0cb
#define XK_Igrave 0x0cc
#define XK_Iacute 0x0cd
#define XK_Icircumflex 0x0ce
#define XK_Idiaeresis 0x0cf
#define XK_ETH 0x0d0

#define XK_Ntilde 0x0d1
#define XK_Ograve 0x0d2
#define XK_Oacute 0x0d3
#define XK_Ocircumflex 0x0d4
#define XK_Otilde 0x0d5
#define XK_Odiaeresis 0x0d6
#define XK_multiply 0x0d7
#define XK_Ooblique 0x0d8
#define XK_Ugrave 0x0d9
#define XK_Uacute 0x0da
#define XK_Ucircumflex 0x0db
#define XK_Udiaeresis 0x0dc
#define XK_Yacute 0x0dd
#define XK_THORN 0x0de
#define XK_ssharp 0x0df
#define XK_agrave 0x0e0
#define XK_aacute 0x0e1
#define XK_acircumflex 0x0e2
#define XK_atilde 0x0e3
#define XK_adiaeresis 0x0e4
#define XK_aring 0x0e5
#define XK_ae 0x0e6
#define XK_ccedilla 0x0e7
#define XK_egrave 0x0e8
#define XK_eacute 0x0e9
#define XK_ecircumfle 0x0ea
#define XK_ediaeresis 0x0eb
#define XK_igrave 0x0ec
#define XK_iacute 0x0ed
#define XK_icircumflex 0x0ee
#define XK_idiaeresis 0x0ef
#define XK_eth 0x0f0
#define XK_ntilde 0x0f1
#define XK_ograve 0x0f2
#define XK_oacute 0x0f3
#define XK_ocircumflex 0x0f4
#define XK_otilde 0x0f5
#define XK_odiaeresis 0x0f6
#define XK_division 0x0f7
#define XK_oshlash 0x0f8
#define XK_ugrave 0x0f9
#define XK_uacute 0x0fa
#define XK_ucircumflex 0x0fb
#define XK_udiaeresis 0x0fc
#define XK_yacute 0x0fd
#define XK_thorn 0x0fe
#define XK_ydiaeresis 0x0ff

#endif /* XK_LATIN1 */

/* Latin 2 Byte 3 = 1 */
#ifdef XK_LATIN2
#define XK_Aogonek 0x1a1
#define XK_breve 0x1a2
#define XK_Lstroke 0x1a3
#define XK_Lcaron 0x1a5
#define XK_Sacute 0x1a6
#define XK_Scaron 0x1a9
#define XK_Scedilla 0x1aa
#define XK_Tcaron 0x1ab
#define XK_Zacute 0x1ac
#define XK_Zcaron 0x1ae
#define XK_Zabovedot 0x1af
#define XK_aogonek 0x1b1
#define XK_ogonek 0x1b2
#define XK_lstroke 0x1b3

```



```

#define XK_lcaron          0x1b5      #define XK_gabovedot      0x2f5
#define XK_sacute          0x1b6      #define XK_gcircumflex    0x2f8
#define XK_caron           0x1b7      #define XK_ubreve         0x2fd
#define XK_scaron          0x1b9      #define XK_scircumflex    0x2fe
#define XK_scedilla        0x1ba
#define XK_tcaron          0x1bb
#define XK_zacute          0x1bc      /* Latin 4 Byte 3 = 3 */
#define XK_doubleacute     0x1bd      #ifdef XK_LATIN4
#define XK_zcaron          0x1be      #define XK_kra             0x3a2
#define XK_zabovedot      0x1bf      #define XK_rcedilla        0x3a3
#define XK_Racute          0x1c0      #define XK_Itilde         0x3a5
#define XK_Abreve          0x1c3      #define XK_Lcedilla        0x3a6
#define XK_Lacute          0x1c5      #define XK_Emacron         0x3aa
#define XK_Cacute          0x1c6      #define XK_Gcedilla        0x3ab
#define XK_Ccaron          0x1c8      #define XK_Tslash          0x3ac
#define XK_Eogonek         0x1ca      #define XK_rcedilla        0x3b3
#define XK_Ecaron          0x1cc      #define XK_Itilde         0x3b5
#define XK_Dcaron          0x1cf      #define XK_lcedilla        0x3b6
#define XK_Dstroke         0x1d0      #define XK_emacron         0x3ba
#define XK_Nacute          0x1d1      #define XK_gcedilla        0x3bb
#define XK_Ncaron          0x1d2      #define XK_tslash          0x3bc
#define XK_Odoubleacute    0x1d5      #define XK_ENG             0x3bd
#define XK_Rcaron          0x1d8      #define XK_eng             0x3bf
#define XK_Uring           0x1d9      #define XK_Amacron         0x3c0
#define XK_Udoubleacute    0x1db      #define XK_Iogonek         0x3c7
#define XK_Tcedilla        0x1de      #define XK_Eabovedot       0x3cc
#define XK_racute          0x1e0      #define XK_Imacron         0x3cf
#define XK_abreve          0x1e3      #define XK_Ncedilla        0x3d1
#define XK_lacute          0x1e5      #define XK_Omacron         0x3d2
#define XK_cacute          0x1e6      #define XK_Kcedilla        0x3d3
#define XK_ccaron          0x1e8      #define XK_Uogonek         0x3d9
#define XK_eogonek         0x1ea      #define XK_Utilde          0x3dd
#define XK_ecaron          0x1ec      #define XK_Umacron         0x3de
#define XK_dcaron          0x1ef      #define XK_amacron         0x3e0
#define XK_dstroke         0x1f0      #define XK_iogonek         0x3e7
#define XK_nacute          0x1f1      #define XK_eabovedot       0x3ec
#define XK_ncaron          0x1f2      #define XK_imacron         0x3ef
#define XK_odoubleacute    0x1f5      #define XK_ncedilla        0x3f1
#define XK_udoubleacute    0x1fb      #define XK_omacron         0x3f2
#define XK_rcaron          0x1f8      #define XK_kcedilla        0x3f3
#define XK_uring           0x1f9      #define XK_uogonek         0x3f9
#define XK_tcedilla        0x1fe      #define XK_utilde          0x3fd
#define XK_abovedot        0x1ff      #define XK_umacron         0x3fe
#endif /* XK_LATIN2 */

/* Latin 3 Byte 3 = 2 */
#ifdef XK_LATIN3
#define XK_Hstroke          0x2a1
#define XK_Hcircumflex     0x2a6
#define XK_Iabovedot       0x2a9
#define XK_Gbreve          0x2ab
#define XK_Jcircumflex     0x2ac
#define XK_hstroke         0x2b1
#define XK_hcircumflex     0x2b6
#define XK_idotless        0x2b9
#define XK_gbreve          0x2bb
#define XK_jcircumflex     0x2bc
#define XK_Cabovedot       0x2c5
#define XK_Ccircumflex     0x2c6
#define XK_Gabovedot       0x2d5
#define XK_Gcircumflex     0x2d8
#define XK_Ubreve          0x2dd
#define XK_Scircumflex     0x2de
#define XK_cabovedot       0x2e5
#define XK_ccircumflex     0x2e6
#endif

#define XK_gabovedot      0x2f5
#define XK_gcircumflex    0x2f8
#define XK_ubreve         0x2fd
#define XK_scircumflex    0x2fe
#endif /* XK_LATIN3 */

/* Latin 4 Byte 3 = 3 */
#ifdef XK_LATIN4
#define XK_kra             0x3a2
#define XK_rcedilla        0x3a3
#define XK_Itilde         0x3a5
#define XK_Lcedilla        0x3a6
#define XK_Emacron         0x3aa
#define XK_Gcedilla        0x3ab
#define XK_Tslash          0x3ac
#define XK_rcedilla        0x3b3
#define XK_Itilde         0x3b5
#define XK_lcedilla        0x3b6
#define XK_emacron         0x3ba
#define XK_gcedilla        0x3bb
#define XK_tslash          0x3bc
#define XK_ENG             0x3bd
#define XK_eng             0x3bf
#define XK_Amacron         0x3c0
#define XK_Iogonek         0x3c7
#define XK_Eabovedot       0x3cc
#define XK_Imacron         0x3cf
#define XK_Ncedilla        0x3d1
#define XK_Omacron         0x3d2
#define XK_Kcedilla        0x3d3
#define XK_Uogonek         0x3d9
#define XK_Utilde          0x3dd
#define XK_Umacron         0x3de
#define XK_amacron         0x3e0
#define XK_iogonek         0x3e7
#define XK_eabovedot       0x3ec
#define XK_imacron         0x3ef
#define XK_ncedilla        0x3f1
#define XK_omacron         0x3f2
#define XK_kcedilla        0x3f3
#define XK_uogonek         0x3f9
#define XK_utilde          0x3fd
#define XK_umacron         0x3fe
#endif /* XK_LATIN4 */

/* Katakana Byte 3 = 4 */
#ifdef XK_KATAKANA
#define XK_overline        0x47e
#define XK_kana_fullstop   0x4a1
#define XK_kana_openingbracket 0x4a2
#define XK_kana_closingbracket 0x4a3
#define XK_kana_comma      0x4a4
#define XK_kana_conjunctive 0x4a5
#define XK_kana_WO         0x4a6
#define XK_kana_a           0x4a7
#define XK_kana_i           0x4a8
#define XK_kana_u           0x4a9
#define XK_kana_e           0x4aa
#define XK_kana_o           0x4ab
#define XK_kana_ya          0x4ac
#define XK_kana_yu          0x4ad
#define XK_kana_yo          0x4ae
#define XK_kana_tsu         0x4af
#define XK_prolongedsound   0x4b0
#define XK_kana_A           0x4b1

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#define XK_kana_I          0x4b2      #define XK_Arabic_jeem      0x5cc
#define XK_kana_U          0x4b3      #define XK_Arabic_hah      0x5cd
#define XK_kana_E          0x4b4      #define XK_Arabic_khah     0x5ce
#define XK_kana_O          0x4b5      #define XK_Arabic_dal      0x5cf
#define XK_kana_KA         0x4b6      #define XK_Arabic_thal     0x5d0
#define XK_kana_KI         0x4b7      #define XK_Arabic_ra       0x5d1
#define XK_kana_KU         0x4b8      #define XK_Arabic_zain     0x5d2
#define XK_kana_KE         0x4b9      #define XK_Arabic_seen     0x5d3
#define XK_kana_KO         0x4ba      #define XK_Arabic_sheen    0x5d4
#define XK_kana_SA         0x4bb      #define XK_Arabic_sad      0x5d5
#define XK_kana_SHI        0x4bc      #define XK_Arabic_dad      0x5d6
#define XK_kana_SU         0x4bd      #define XK_Arabic_tah      0x5d7
#define XK_kana_SE         0x4be      #define XK_Arabic_zah      0x5d8
#define XK_kana_SO         0x4bf      #define XK_Arabic_ain      0x5d9
#define XK_kana_TA         0x4c0      #define XK_Arabic_ghain    0x5da
#define XK_kana_CHI        0x4c1      #define XK_Arabic_tatweel  0x5e0
#define XK_kana_TSU        0x4c2      #define XK_Arabic_feh      0x5e1
#define XK_kana_TE         0x4c3      #define XK_Arabic_qaf      0x5e2
#define XK_kana_TO         0x4c4      #define XK_Arabic_kaf      0x5e3
#define XK_kana_NA         0x4c5      #define XK_Arabic_lam      0x5e4
#define XK_kana_NI         0x4c6      #define XK_Arabic_meem     0x5e5
#define XK_kana_NU         0x4c7      #define XK_Arabic_noon     0x5e6
#define XK_kana_NE         0x4c8      #define XK_Arabic_ha       0x5e7
#define XK_kana_NO         0x4c9      #define XK_Arabic_waw      0x5e8
#define XK_kana_HA         0x4ca      #define XK_Arabic_alefmaksura 0x5e9
#define XK_kana_HI         0x4cb      #define XK_Arabic_yeh      0x5ea
#define XK_kana_FU         0x4cc      #define XK_Arabic_fathatan 0x5eb
#define XK_kana_HE         0x4cd      #define XK_Arabic_dammatan 0x5ec
#define XK_kana_HO         0x4ce      #define XK_Arabic_kasratan 0x5ed
#define XK_kana_MA         0x4cf      #define XK_Arabic_fatha    0x5ee
#define XK_kana_MI         0x4d0      #define XK_Arabic_damma    0x5ef
#define XK_kana_MU         0x4d1      #define XK_Arabic_kasra    0x5f0
#define XK_kana_ME         0x4d2      #define XK_Arabic_shadda   0x5f1
#define XK_kana_MO         0x4d3      #define XK_Arabic_sukun    0x5f2
#define XK_kana_YA         0x4d4      #define XK_Arabic_switch   0xFF7E
#define XK_kana_YU         0x4d5      #endif /* XK_ARABIC */
#define XK_kana_YO         0x4d6
#define XK_kana_RA         0x4d7      /* Cyrillic Byte 3 = 6 */
#define XK_kana_RI         0x4d8      #ifdef XK_CYRILLIC
#define XK_kana_RU         0x4d9      #define XK_Serbian_dje      0x6a1
#define XK_kana_RE         0x4da      #define XK_Macedonia_gje    0x6a2
#define XK_kana_RO         0x4db      #define XK_Cyrillic_io      0x6a3
#define XK_kana_WA         0x4dc      #define XK_Ukrainian_ie     0x6a4
#define XK_kana_N          0x4dd      #define XK_Macedonia_dse    0x6a5
#define XK_voicedsound      0x4de      #define XK_Ukrainian_i      0x6a6
#define XK_semivoicedsound 0x4df      #define XK_Ukrainian_yi     0x6a7
#define XK_kana_switch      0xFF7E    #define XK_Cyrillic_je      0x6a8
#define XK_katakana        /* XK_KATAKANA */ #define XK_Cyrillic_lje     0x6a9
#define XK_katakana        /* XK_KATAKANA */ #define XK_Cyrillic_nje     0x6aa
#define XK_katakana        /* XK_KATAKANA */ #define XK_Serbian_tshe     0x6ab
#define XK_katakana        /* XK_KATAKANA */ #define XK_Macedonia_kje     0x6ac
#define XK_katakana        /* XK_KATAKANA */ #define XK_Byelorussian_shortu 0x6ae
#define XK_katakana        /* XK_KATAKANA */ #define XK_Cyrillic_dzhe     0x6af
#define XK_katakana        /* XK_KATAKANA */ #define XK_numerosign       0x6b0
#define XK_katakana        /* XK_KATAKANA */ #define XK_Serbian_DJE      0x6b1
#define XK_katakana        /* XK_KATAKANA */ #define XK_Macedonia_GJE     0x6b2
#define XK_katakana        /* XK_KATAKANA */ #define XK_Cyrillic_IO      0x6b3
#define XK_katakana        /* XK_KATAKANA */ #define XK_Ukrainian_IE     0x6b4
#define XK_katakana        /* XK_KATAKANA */ #define XK_Macedonia_DSE     0x6b5
#define XK_katakana        /* XK_KATAKANA */ #define XK_Ukrainian_I      0x6b6
#define XK_katakana        /* XK_KATAKANA */ #define XK_Ukrainian_YI     0x6b7
#define XK_katakana        /* XK_KATAKANA */ #define XK_Cyrillic_JE      0x6b8
#define XK_katakana        /* XK_KATAKANA */ #define XK_Cyrillic_LJE     0x6b9
#define XK_katakana        /* XK_KATAKANA */ #define XK_Cyrillic_NJE     0x6ba
#define XK_katakana        /* XK_KATAKANA */ #define XK_Serbian_TSHE     0x6bb

```

```

#define XK_Macedonia_KJE      0x6bc
#define XK_Byelorussian_SHORTU 0x6be
#define XK_Cyrillic_DZHE      0x6bf
#define XK_Cyrillic_yu        0x6c0
#define XK_Cyrillic_a         0x6c1
#define XK_Cyrillic_be        0x6c2
#define XK_Cyrillic_tse       0x6c3
#define XK_Cyrillic_de        0x6c4
#define XK_Cyrillic_ie        0x6c5
#define XK_Cyrillic_ef        0x6c6
#define XK_Cyrillic_ghe       0x6c7
#define XK_Cyrillic_ha        0x6c8
#define XK_Cyrillic_i         0x6c9
#define XK_Cyrillic_shorti    0x6ca
#define XK_Cyrillic_ka        0x6cb
#define XK_Cyrillic_el        0x6cc
#define XK_Cyrillic_em        0x6cd
#define XK_Cyrillic_en        0x6ce
#define XK_Cyrillic_o         0x6cf
#define XK_Cyrillic_pe        0x6d0
#define XK_Cyrillic_ya        0x6d1
#define XK_Cyrillic_er        0x6d2
#define XK_Cyrillic_es        0x6d3
#define XK_Cyrillic_te        0x6d4
#define XK_Cyrillic_u         0x6d5
#define XK_Cyrillic_zhe       0x6d6
#define XK_Cyrillic_ve        0x6d7
#define XK_Cyrillic_softsign  0x6d8
#define XK_Cyrillic_yeru      0x6d9
#define XK_Cyrillic_ze        0x6da
#define XK_Cyrillic_sha       0x6db
#define XK_Cyrillic_e         0x6dc
#define XK_Cyrillic_shcha     0x6dd
#define XK_Cyrillic_che       0x6de
#define XK_Cyrillic_hardsign  0x6df
#define XK_Cyrillic_YU        0x6e0
#define XK_Cyrillic_A         0x6e1
#define XK_Cyrillic_BE        0x6e2
#define XK_Cyrillic_TSE       0x6e3
#define XK_Cyrillic_DE        0x6e4
#define XK_Cyrillic_IE        0x6e5
#define XK_Cyrillic_EF        0x6e6
#define XK_Cyrillic_GHE       0x6e7
#define XK_Cyrillic_HA        0x6e8
#define XK_Cyrillic_I         0x6e9
#define XK_Cyrillic_SHORTI    0x6ea
#define XK_Cyrillic_KA        0x6eb
#define XK_Cyrillic_EL        0x6ec
#define XK_Cyrillic_EM        0x6ed
#define XK_Cyrillic_EN        0x6ee
#define XK_Cyrillic_O         0x6ef
#define XK_Cyrillic_PE        0x6f0
#define XK_Cyrillic_YA        0x6f1
#define XK_Cyrillic_ER        0x6f2
#define XK_Cyrillic_ES        0x6f3
#define XK_Cyrillic_TE        0x6f4
#define XK_Cyrillic_U         0x6f5
#define XK_Cyrillic_ZHE       0x6f6
#define XK_Cyrillic_VE        0x6f7
#define XK_Cyrillic_SOFTSIGN  0x6f8
#define XK_Cyrillic_YERU      0x6f9
#define XK_Cyrillic_ZE        0x6fa
#define XK_Cyrillic_SHA       0x6fb
#define XK_Cyrillic_E         0x6fc
#define XK_Cyrillic_SHCHA     0x6fd

#define XK_Cyrillic_CHE      0x6fe
#define XK_Cyrillic_HARDSIGN 0x6ff

#endif /* XK_CYRILLIC */

/* Greek* Byte 3 = 7 */
#ifdef XK_GREEK
#define XK_Greek_ALPHAaccent 0x7a1
#define XK_Greek_EPSILONaccent 0x7a2
#define XK_Greek_ETAaccent 0x7a3
#define XK_Greek_IOTAaccent 0x7a4
#define XK_Greek_IOTAdiaeresis 0x7a5
#define XK_Greek_OMICRONaccent 0x7a7
#define XK_Greek_UPSILONaccent 0x7a8
#define XK_Greek_UPSILONdieresis 0x7a9
#define XK_Greek_OMEGAaccent 0x7ab
#define XK_Greek_accentdieresis 0x7ae
#define XK_Greek_horizbar 0x7af
#define XK_Greek_alphaaccent 0x7b1
#define XK_Greek_epsilonaccent 0x7b2
#define XK_Greek_etaaccent 0x7b3
#define XK_Greek_iotaaccent 0x7b4
#define XK_Greek_iotadieresis 0x7b5
#define XK_Greek_iotaaccentdieresis 0x7b6
#define XK_Greek_omicronaccent 0x7b7
#define XK_Greek_upsilonaccent 0x7b8
#define XK_Greek_upsilondieresis 0x7b9
#define XK_Greek_upsilonaccentdieresis 0x7ba
#define XK_Greek_omegaaccent 0x7bb
#define XK_Greek_ALPHA 0x7c1
#define XK_Greek_BETA 0x7c2
#define XK_Greek_GAMMA 0x7c3
#define XK_Greek_DELTA 0x7c4
#define XK_Greek_EPSILON 0x7c5
#define XK_Greek_ZETA 0x7c6
#define XK_Greek_ETA 0x7c7
#define XK_Greek_THETA 0x7c8
#define XK_Greek_IOTA 0x7c9
#define XK_Greek_KAPPA 0x7ca
#define XK_Greek_LAMDA 0x7cb
#define XK_Greek_LAMBDA 0x7cb
#define XK_Greek_MU 0x7cc
#define XK_Greek_NU 0x7cd
#define XK_Greek_XI 0x7ce
#define XK_Greek_OMICRON 0x7cf
#define XK_Greek_PI 0x7d0
#define XK_Greek_RHO 0x7d1
#define XK_Greek_SIGMA 0x7d2
#define XK_Greek_TAU 0x7d4
#define XK_Greek_UPSILON 0x7d5
#define XK_Greek_PHI 0x7d6
#define XK_Greek_CHI 0x7d7
#define XK_Greek_PSI 0x7d8
#define XK_Greek_OMEGA 0x7d9
#define XK_Greek_alpha 0x7e1
#define XK_Greek_beta 0x7e2
#define XK_Greek_gamma 0x7e3
#define XK_Greek_delta 0x7e4
#define XK_Greek_epsilon 0x7e5
#define XK_Greek_zeta 0x7e6
#define XK_Greek_eta 0x7e7
#define XK_Greek_theta 0x7e8
#define XK_Greek_iota 0x7e9
#define XK_Greek_kappa 0x7ea
#define XK_Greek_lamda 0x7eb
#define XK_Greek_lambda 0x7eb

```

```

#define XK_Greek_mu          0x7ec    #define XK_uparrow          0x8fc
#define XK_Greek_nu          0x7ed    #define XK_rihtarrow       0x8fd
#define XK_Greek_xi          0x7ee    #define XK_downarrow      0x8fe
#define XK_Greek_omicron    0x7ef    #endif /* XK_TECHNICAL */
#define XK_Greek_pi          0x7f0
#define XK_Greek_rho          0x7f1    /* Special Byte 3 = 9 */
#define XK_Greek_sigma       0x7f2    #ifdef XK_SPECIAL
#define XK_Greek_finalsmallsigma 0x7f3    #define XK_blank           0x9df
#define XK_Greek_tau         0x7f4    #define XK_soliddiamond    0x9e0
#define XK_Greek_upsilon     0x7f5    #define XK_checkerboard    0x9e1
#define XK_Greek_phi         0x7f6    #define XK_ht              0x9e2
#define XK_Greek_chi         0x7f7    #define XK_ff              0x9e3
#define XK_Greek_psi         0x7f8    #define XK_cr              0x9e4
#define XK_Greek_omega       0x7f9    #define XK_lf              0x9e5
#define XK_Greek_switch      0xFF7E    #define XK_nl              0x9e8
#define /* XK_GREEK */          #define XK_vt              0x9e9
                                #define XK_lowrightcorner    0x9ea
                                #define XK_uprightcorner      0x9eb
                                #define XK_upleftcorner        0x9ec
                                #define XK_lowleftcorner        0x9ed
                                #define XK_crossinglines        0x9ee
                                #define XK_horizlinescan1        0x9ef
                                #define XK_horizlinescan3        0x9f0
                                #define XK_horizlinescan5        0x9f1
                                #define XK_horizlinescan7        0x9f2
                                #define XK_horizlinescan9        0x9f3
                                #define XK_leftt               0x9f4
                                #define XK_rightt              0x9f5
                                #define XK_bott                0x9f6
                                #define XK_topt                0x9f7
                                #define XK_vertbar              0x9f8
                                #endif /* XK_SPECIAL */

/*TechnicalByte 3 = 8 */
#ifdef XK_TECHNICAL
#define XK_leftradical        0x8a1
#define XK_topleftradical    0x8a2
#define XK_horizconnector    0x8a3
#define XK_topintegral        0x8a4
#define XK_botintegral        0x8a5
#define XK_vertconnector     0x8a6
#define XK_topleftsqbracket   0x8a7
#define XK_botleftsqbracket   0x8a8
#define XK_toprightsqbracket  0x8a9
#define XK_botrightsqbracket  0x8aa
#define XK_topleftparens     0x8ab
#define XK_botleftparens     0x8ac
#define XK_toprightparens    0x8ad
#define XK_botrightparens    0x8ae
#define XK_leftmiddlecurlybrace 0x8af
#define XK_rightmiddlecurlybrace 0x8b0
#define XK_topleftsummation  0x8b1
#define XK_botleftsummation  0x8b2
#define XK_topvertsummationconnector 0x8b3
#define XK_botvertsummationconnector 0x8b4
#define XK_toprightsummation 0x8b5
#define XK_botrightsummation 0x8b6
#define XK_rightmiddlesummation 0x8b7
#define XK_lessthanequal     0x8bc
#define XK_notequal          0x8bd
#define XK_greaterthanequal   0x8be
#define XK_integral          0x8bf
#define XK_therefore         0x8c0
#define XK_variation         0x8c1
#define XK_infinity          0x8c2
#define XK_nabla             0x8c5
#define XK_approximate       0x8c8
#define XK_similarequal      0x8c9
#define XK_ifonlyif          0x8cd
#define XK_implies           0x8ce
#define XK_identical         0x8cf
#define XK_radical           0x8d6
#define XK_includedin        0x8da
#define XK_includes          0x8db
#define XK_intersection       0x8dc
#define XK_union             0x8dd
#define XK_logicaland        0x8de
#define XK_logicalor         0x8df
#define XK_partialderivative 0x8ef
#define XK_function          0x8f6
#define XK_leftarrow         0x8fb

#define XK_publishing        /* Publishing Byte 3 = a */
#ifdef XK_PUBLISHING
#define XK_emspace           0xaa1
#define XK_enspace           0xaa2
#define XK_em3space          0xaa3
#define XK_em4space          0xaa4
#define XK_digitspace        0xaa5
#define XK_punctspace        0xaa6
#define XK_thinspace         0xaa7
#define XK_hairspace         0xaa8
#define XK_emdash            0xaa9
#define XK_endash            0xaaa
#define XK_signifblank        0xaac
#define XK_ellipsis          0xaae
#define XK_doubbaselinedot   0xaaf
#define XK_onethird          0xab0
#define XK_twothirds         0xab1
#define XK_onefifth          0xab2
#define XK_twofifths         0xab3
#define XK_threefifths       0xab4
#define XK_fourfifths        0xab5
#define XK_onesixth          0xab6
#define XK_fivesixths        0xab7
#define XK_careof            0xab8
#define XK_figdash           0xabb
#define XK_leftanglebracket  0xabc
#define XK_decimalpoint      0xabd
#define XK_rightanglebracket 0xabe
#define XK_marker            0xabf
#define XK_oneeighth         0xac3
#define XK_threeeighths      0xac4
#define XK_fiveeighths       0xac5

```

```

#define XK_seveneighths      0xac6    #define XK_underbar        0xbc6
#define XK_trademark         0xac9    #define XK_jot             0xbca
#define XK_signaturemark     0xaca    #define XK_quad            0xbcc
#define XK_trademarkincircle 0xacb    #define XK_uptack          0xbce
#define XK_leftopentriangle   0xacc    #define XK_circle          0xbcf
#define XK_rightopentriangle  0acd     #define XK_upstile         0xbd3
#define XK_emopencircle       0xace    #define XK_downshoe        0xbd6
#define XK_emopenrectangle    0xacf    #define XK_rightshoe       0xbd8
#define XK_leftsinglequotemark 0xad0   #define XK_leftshoe        0xbda
#define XK_rightsinglequotemark 0xad1   #define XK_lefttack         0xbdc
#define XK_leftdoublequotemark 0xad2   #define XK_righttack        0xbfc
#define XK_rightdoublequotemark 0xad3   #endif /* XK_APL */
#define XK_prescription        0xad4
#define XK_minutes            0xad6    /* Hebrew Byte 3 = c */
#define XK_seconds            0xad7    #ifdef XK_HEBREW
#define XK_latincross         0xad9    #define XK_hebrew_doublelowline 0xcdf
#define XK_hexagram           0xada    #define XK_hebrew_aleph      0xce0
#define XK_filledrectbullet    0adb     #define XK_hebrew_bet        0xce1
#define XK_filledlefttribullet 0adc     #define XK_hebrew_gimel      0xce2
#define XK_filledrighttribullet 0add    #define XK_hebrew_dalet      0xce3
#define XK_emfilledcircle     0ade     #define XK_hebrew_he         0xce4
#define XK_emfilledrect       0adf     #define XK_hebrew_waw        0xce5
#define XK_enopencircbullet    0xae0    #define XK_hebrew_zain       0xce6
#define XK_enopensquarebullet  0xae1    #define XK_hebrew_chet       0xce7
#define XK_openrectbullet      0xae2    #define XK_hebrew_tet        0xce8
#define XK_opentribulletup     0xae3    #define XK_hebrew_yod        0xce9
#define XK_opentribulletdown   0xae4    #define XK_hebrew_finalkaph  0xea
#define XK_openstar            0xae5    #define XK_hebrew_kaph       0xeb
#define XK_enfilledcircbullet  0xae6    #define XK_hebrew_lamed      0xec
#define XK_enfilledsqbullet     0xae7    #define XK_hebrew_finalmem    0xcd
#define XK_filledtribulletup    0xae8    #define XK_hebrew_mem        0xee
#define XK_filledtribulletdown  0xae9    #define XK_hebrew_finalnun    0xef
#define XK_leftpointer         0xaea    #define XK_hebrew_nun        0xf0
#define XK_rightpointer        0xaeb    #define XK_hebrew_samech     0xf1
#define XK_club                0xaec    #define XK_hebrew_ayin       0xf2
#define XK_diamond             0xaed    #define XK_hebrew_finalpe     0xf3
#define XK_heart               0xae     #define XK_hebrew_pe         0xf4
#define XK_maltesecross        0xaf0    #define XK_hebrew_finalzade   0xf5
#define XK_dagger              0xaf1    #define XK_hebrew_zade       0xf6
#define XK_doubledagger        0xaf2    #define XK_hebrew_qoph       0xf7
#define XK_checkmark           0xaf3    #define XK_hebrew_resh       0xf8
#define XK_ballotcross         0xaf4    #define XK_hebrew_shin       0xf9
#define XK_musicalsharp        0xaf5    #define XK_hebrew_taw        0xfa
#define XK_musicalflat         0xaf6    #define XK_Hebrew_switch     0xFF7E
#define XK_malesymbol          0xaf7
#define XK_femalesymbol        0xaf8
#define XK_telephone           0xaf9
#define XK_telephonerecorder    0afa
#define XK_phonographcopyright 0xafb
#define XK_caret               0afc
#define XK_singlelowquotemark  0afd
#define XK_doublelowquotemark  0afe
#define XK_cursor              0aff
#endif /* XK_PUBLISHING */

/* APL Byte 3 = b */
#ifdef XK_APL
#define XK_leftcaret           0xba3
#define XK_rightcaret         0xba6
#define XK_downcaret          0xba8
#define XK_upcaret            0xba9
#define XK_overbar            0xbc0
#define XK_downtack           0xbc2
#define XK_upshoe             0xbc3
#define XK_downstile          0xbc4

```

The X Extension Library

Overview

This chapter identifies binary interfaces for libXext, which are defined in the document entitled “X11 Nonrectangular Window Shape Extension” by Keith Packard (copyright X Consortium).

The Extension Library Interfaces

The interfaces listed below in Table 10-4 have been included in SCD2.3 because they are REQUIRED to be present on all compliant systems, in the dynamic library /usr/lib/libXext.so.0. Note that for this release of the SCD the interfaces exported by this library are restricted only to those concerned with the X11 Nonrectangular Window Shape Extension.

Table 10-4: Contents of libXext

```
XShapeCombineMask
XShapeCombineRectangles
XShapeCombineRegion
XShapeCombineShape
XShapeGetRectangles
XShapeInputSelected
XShapeOffsetShape
XShapeQueryExtension
XShapeQueryExtents
XShapeQueryVersion
XShapeSelectInput
```

Figure 10-2 details the manifest constants associated with the Extension library.

Figure 10-2: Manifest Constants from <X11/extensions/shape.h>

#define ShapeSet	0
#define ShapeUnion	1
#define ShapeIntersect	2
#define ShapeSubtract	3
#define ShapeInvert	4
#define ShapeBounding	0
#define ShapeClip	1
#define ShapeNotifyMask	(1L << 0)
#define ShapeNotify	0

The X Toolkit

Overview

This chapter identifies binary interfaces for `libXt`, which are defined in the document *X Toolkit Intrinsics - C Language Interface* by Joel McCormack, Paul Asente, and Ralph R. Swick which is distributed by the X Consortium with X Version 11, Release 5.

In addition, all SCD 2.3 systems will support the X 11 Release 5 Protocol, as defined in *The X Window System (Third Edition)* by Robert W. Scheifler and James Gettys (Digital Press, ISBN 1-55558-088-2).

Finally, all SCD 2.3 systems will support the mechanisms and conventions as specified in the *Inter-Client Communications Convention Manual (ICCCM)* in *The X Window System (Third Edition)* by Robert W. Scheifler and James Gettys (Digital Press, ISBN 1-55558-088-2).

The libXt Interfaces

The interfaces listed below in Table 10-5 and Table 10-6 have been included in SCD 2.3 because they are REQUIRED to be present on all compliant systems, in the dynamic library `/usr/lib/libXt.so.5`.

Table 10-7 contains a list of unsafe macros. These macros should be avoided by application programmers which are trying to build portable SPARC applications.

Table 10-8 contains the exported data which are also REQUIRED to be present in `libXt.so.5`. The format of these entries is: `data[size]`. Data without a size are opaque.

Conformant systems are also REQUIRED to have `/usr/lib/libXt.so.4` in order to support SPARC applications written to conform to versions 2.0, 2.1, and 2.2 of the *SPARC Compliance Definition*. Since the X Version 11, Release 5 specification is a proper superset of the X Version 11, Release 4 specification, system vendors can provide this support by simply making a link to `/usr/lib/libXt.so.5` for the file `/usr/lib/libXt.so.4` as part of the system installation process. If an application executable references `/usr/lib/libXt.so.4` and does not reference `/usr/lib/libXt.so.5`, the application may not use any functionality defined by X11R5 but not defined by X11R4. See the *SPARC Compliance Definition 2.1* for a list of X11R4 components. The file name `/usr/lib/libXt.so.4` is a DEPRECATED interface effective November 1st, 1993. Also DEPRECATED effective November 1st, 1993 are the functions found in Table 10-6 on page 10-86. Any of the DEPRECATED interfaces may be removed from this specification as early as November 1st, 1996 so new applications should not be dependent on them.

Figures 10-10 through 10-18 detail the manifest constants and visible data structures associated with the X Toolkit library.

Figures 10-19 through 10-26 detail the manifest constants and visible data structures needed by widget programmers. Only widget programmers should use the information in these figures.

Table 10-5. Contents of libXt, Part 1 of 2

XtAddCallback	XtCvtIntToUnsignedChar	XtIsSensitive
XtAddCallbacks	XtCvtStringToAcceleratorTable	XtIsShell
XtAddEventHandler	XtCvtStringToAtom	XtIsSubclass
XtAddExposureToRegion	XtCvtStringToBool	XtIsTopLevelShell
XtAddGrab	XtCvtStringToBoolean	XtIsTransientShell
XtAddRawEventHandler	XtCvtStringToCursor	XtIsVendorShell
XtAllocateGC	XtCvtStringToDimension	XtIsWidget
XtAppAddActionHook	XtCvtStringToDisplay	XtIsWMSShell
XtAppAddActions	XtCvtStringToFile	XtKeysymToKeycodeList
XtAppAddInput	XtCvtStringToFloat	XtLastTimestampProcessed
XtAppAddTimeOut	XtCvtStringToFont	XtMakeGeometryRequest
XtAppAddWorkProc	XtCvtStringToFontSet	XtMakeResizeRequest
XtAppCreateShell	XtCvtStringToFontStruct	XtMalloc
XtAppError	XtCvtStringToInitialState	XtManageChild
XtAppErrorMsg	XtCvtStringToInt	XtManageChildren
XtAppGetErrorDatabase	XtCvtStringToPixel	XtMapWidget
XtAppGetErrorDatabaseText	XtCvtStringToShort	XtMenuPopupAction
XtAppGetSelectionTimeout	XtCvtStringToTranslationTable	XtMergeArgLists
XtAppInitialize	XtCvtStringToUnsignedChar	XtMoveWidget
XtAppMainLoop	XtCvtStringToVisual	XtName
XtAppNextEvent	XtDatabase	XtNameToWidget
XtAppPeekEvent	XtDestroyApplicationContext	XtNewString
XtAppPending	XtDestroyWidget	XtOpenDisplay
XtAppProcessEvent	XtDisownSelection	XtOverrideTranslations
XtAppReleaseCacheRefs	XtDispatchEvent	XtOwnSelection
XtAppSetErrorHandler	XtDisplay	XtOwnSelectionIncremental
XtAppSetErrorMsgHandler	XtDisplayInitialize	XtParent
XtAppSetFallbackResources	XtDisplayOfObject	XtParseAcceleratorTable
XtAppSetSelectionTimeout	XtDisplayStringConversionWarning	XtParseTranslationTable
XtAppSetTypeConverter	XtDisplayToApplicationContext	XtPopdown
XtAppSetWarningHandler	XtFindFile	XtPopup
XtAppSetWarningMsgHandler	XtFree	XtPopupSpringLoaded
XtAppWarning	XtGetActionKeysym	XtQueryGeometry
XtAppWarningMsg	XtGetActionList	XtRealizeWidget
XtAugmentTranslations	XtGetApplicationNameAndClass	XtRealloc
XtBuildEventMask	XtGetApplicationResources	XtRegisterCaseConverter
XtCallAcceptFocus	XtGetConstraintResourceList	XtRegisterGrabAction
XtCallActionProc	XtGetGC	XtReleaseGC
XtCallbackExclusive	XtGetKeysymTable	XtRemoveActionHook
XtCallbackNone	XtGetMultiClickTime	XtRemoveAllCallbacks
XtCallbackNonexclusive	XtGetResourceList	XtRemoveCallback
XtCallbackPopdown	XtGetSelectionRequest	XtRemoveCallbacks
XtCallbackReleaseCacheRef	XtGetSelectionValue	XtRemoveEventHandler
XtCallbackReleaseCacheRefList	XtGetSelectionValueIncremental	XtRemoveGrab
XtCallCallbackList	XtGetSelectionValues	XtRemoveInput
XtCallCallbacks	XtGetSelectionValuesIncremental	XtRemoveRawEventHandler
XtCallConverter	XtGetSubresources	XtRemoveTimeout
XtCalloc	XtGetSubvalues	XtRemoveWorkProc
XtClass	XtGetValues	XtResizeWidget
XtCloseDisplay	XtGrabButton	XtResizeWindow
XtConfigureWidget	XtGrabKey	XtResolvePathname
XtConvertAndStore	XtGrabKeyboard	XtScreen
XtConvertCase	XtGrabPointer	XtScreenDatabase
XtCreateApplicationContext	XtHasCallbacks	XtScreenOfObject
XtCreateManagedWidget	XtInitializeWidgetClass	XtSetKeyboardFocus
XtCreatePopupShell	XtInsertEventHandler	XtSetKeyTranslator
XtCreateWidget	XtInsertRawEventHandler	XtSetLanguageProc
XtCreateWindow	XtInstallAccelerators	XtSetMappedWhenManaged
XtCvtColorToPixel	XtInstallAllAccelerators	XtSetMultiClickTime
XtCvtIntToBool	XtIsApplicationShell	XtSetSensitive
XtCvtIntToBoolean	XtIsComposite	XtSetSubvalues
XtCvtIntToColor	XtIsConstraint	XtSetTypeConverter
XtCvtIntToFloat	XtIsManaged	XtSetValues
XtCvtIntToFont	XtIsObject	XtSetWMColormapWindows
XtCvtIntToPixel	XtIsOverrideShell	XtSuperclass
XtCvtIntToPixmap	XtIsRealized	XtToolkitInitialize
XtCvtIntToShort	XtIsRectObj	XtTranslateCoords

Table 10-5. Contents of `libXt`, Part 2 of 2

<code>XtTranslateKey</code>	<code>XtUnrealizeWidget</code>	<code>XtVaGetValues</code>
<code>XtTranslateKeycode</code>	<code>XtVaAppCreateShell</code>	<code>XtVaSetSubvalues</code>
<code>XtUngrabButton</code>	<code>XtVaAppInitialize</code>	<code>XtVaSetValues</code>
<code>XtUngrabKey</code>	<code>XtVaCreateArgsList</code>	<code>XtWidgetToApplicationContext</code>
<code>XtUngrabKeyboard</code>	<code>XtVaCreateManagedWidget</code>	<code>XtWindow</code>
<code>XtUngrabPointer</code>	<code>XtVaCreatePopupShell</code>	<code>XtWindowOfObject</code>
<code>XtUninstallTranslations</code>	<code>XtVaCreateWidget</code>	<code>XtWindowToWidget</code>
<code>XtUnmanageChild</code>	<code>XtVaGetApplicationResources</code>	
<code>XtUnmanageChildren</code>	<code>XtVaGetSubresources</code>	
<code>XtUnmapWidget</code>	<code>XtVaGetSubvalues</code>	

Deprecated X Toolkit Functions

Table10-6 is a list of Xt functions which are now DEPRECATED but continue to be supported for the sake of old applications. The X Consortium defines these functions as obsolete. When MIT stops shipping these functions as part of the X11 sample implementation these functions may be removed from the SCD. Application developers are discouraged from using these functions in new applications. The effective date of DEPRECATION is November 1st, 1993. These function interfaces may be removed from the SCD as early as November 1st, 1996

Table10-6: Deprecated libXt Functions

Obsolete Function	Superseded By
XtAddActions	XtAppAddActions
XtAddConverter	XtSetTypeConverter
XtAddInput	XtAppAddInput
XtAddTimeOut	XtAppAddTimeOut
XtAddWorkProc	XtAppAddWorkProc2
XtAppAddConverter	XtAppSetTypeConverter
XtConvert	XtConvertAnStore
XtCreateApplicationShell	XtAppCreateShell
XtDestroyGC	XtReleaseGC
XtDirectConvert	XtCallConverter
XtError	XtAppError
XtErrorMsg	XtAppErrorMsg
XtGetErrorDatabase	XtAppGetErrorDatabase
XtGetErrorDatabaseText	XtAppGetErrorDatabaseText
XtGetSelectionTimeout	XtAppGetSelectionTimeout
XtInitialize	XtAppInitialize
XtMainLoop	XtAppMainLoop
XtNextEvent	XtAppNextEvent
XtPeekEvent	XtAppPeekEvent
XtPending	XtAppPending
XtProcessEvent	XtAppProcessEvent
XtSetErrorHandler	XtAppSetErrorHandler
XtSetErrorMsgHandler	XtAppSetErrorMsgHandler
XtSetSelectionTimeout	XtAppSetSelectionTimeout
XtSetWarningHandler	XtAppSetWarningHandler
XtSetWarningMsgHandler	XtAppSetWarningMsgHandler
XtStringConversionWarning	XtDisplayStringConversionWarning
XtWarning	XtAppWarning
XtWarningMsg	XtAppWarningMsg

Unsafe Macros

Ordinarily, this document only specifies the system resources available for use by applications on all SPARC compliant systems and makes no comment regarding the programming language or API used by application programmers for building applications. But SPARC International recognizes that many SPARC applications will be written in the C programming language and are likely to use the API specified by the X Consortium. Some of the macros defined by the X Consortium for the X Toolkit access symbols which are not defined to be part of the ABI.

All of these macros are defined by the `<X11/Intrinsic.h>` header file. Fortunately, each of these macros have ABI compliant functions which can be used in their place. Table 10-7 has a list of these macros. The ABI compliant functions have the same name as the the unsafe macros. This means that C programmers that wish to use the functions, rather than the macros, must `"#undef"` the macros in their source code after the point where the source code includes `<X11/Intrinsic.h>`.

Table 10-7. Unsafe Macros

```
XtIsApplicationShell
XtIsComposite
XtIsConstraint
XtIsOverrideShell
XtIsRectObj
XtIsShell
XtIsTopLevelShell
XtIsTransientShell
XtIsVendorShell
XtIsWidget
XtIsWMShell
```

Table 10-8. Exported Data for `libxt`.

```

applicationShellClassRec[0x9c]
applicationShellWidgetClass[0x4]
colorConvertArgs[0x18]
compositeClassRec[0x88]
compositeWidgetClass[0x4]
constraintClassRec[0xa4]
constraintWidgetClass[0x4]
coreWidgetClass[0x4]
objectClass[0x4]
objectClassRec[0x74]
overrideShellClassRec[0x90]
overrideShellWidgetClass[0x4]
rectObjClass[0x4]
rectObjClassRec[0x74]
screenConvertArg[0xc]
shellClassRec[0x8c]
shellWidgetClass[0x4]
topLevelShellClassRec[0x98]
topLevelShellWidgetClass[0x4]
transientShellClassRec[0x98]
transientShellWidgetClass[0x4]
vendorShellClassRec[0x94]
vendorShellWidgetClass[0x4]
widgetClass[0x4]
widgetClassRec[0x74]
wmShellClassRec[0x90]
wmShellWidgetClass[0x4]
XtCxtToolkitError[0x4]
_XtInherit1
_XtInheritTranslations2
XtShellStrings3
XtStrings4

```

1. `_XtInherit` is only for use by widget programmers.

2. `_XtInheritTranslations` is only for use by widget programmers.

3. `XtShellStrings` and `XtStrings` are reserved for use by the X Toolkit Library but applications which are intended to be portable at the binary level must refrain from accessing these global symbols. The definition of these global data may change in incompatible ways in future releases of X.

4. See note number 3.

Figure 10-3: Manifest Constants and Data Types from <X11/Composite.h>

```
typedef struct _CompositeClassRec *CompositeWidgetClass;
typedef Cardinal (*XtOrderProc)();
```

Figure 10-4: Manifest Constants and Data Types from <X11/Constraint.h>

```
typedef struct _ConstraintClassRec *ConstraintWidgetClass;
```

Figure 10-5: Manifest Constants and Data Types from <X11/Core.h>

```
typedef struct _WidgetClassRec *CoreWidgetClass;
typedef struct _WidgetRec *CoreWidget
```

Figure 10-6: Manifest Constants and Data Types from <X11/Intrinsic.h>

```
#define XtSpecificationRelease 5

typedef char *String;
typedef struct _WidgetRec *Widget;
typedef Widget *WidgetList;
typedef struct _WidgetClassRec *WidgetClass;
typedef struct _CompositeRec *CompositeWidget;
typedef struct _XtActionsRec *XtActionList;
typedef struct _XtEventRec *XtEventTable;
typedef struct _XtBoundAccActionRec *XtBoundAccActions;

typedef struct _XtAppStruct *XtAppContext;
typedef unsigned long XtValueMask;
typedef unsigned long XtIntervalId;
typedef unsigned long XtInputId;
typedef unsigned long XtWorkProcId;
typedef unsigned int XtGeometryMask;
typedef unsigned long XtGCMask; /* Mask of values that are used by widget*/
typedef unsigned long Pixel; /* Index into colormap */
typedef int XtCacheType;
#define XtCacheNone 0x001
#define XtCacheAll 0x002
#define XtCacheByDisplay 0x003
#define XtCacheRefCount 0x100

/*System Dependent Definitions; see spec for specific range requirements. Do not assume
every implementation uses the same base types! XtArgVal ought to be a union of XtPointer,
char *, long, int *, and proc but casting to union types is not really supported. So the
typedef for XtArgVal should be chosen such that
    sizeof (XtArgVal) >=    sizeof(XtPointer)
                           sizeof(char *)
                           sizeof(long)
                           sizeof(int *)
                           sizeof(proc *)
ArgLists rely heavily on the above typedef. */

typedef char Boolean;
typedef long XtArgVal;
typedef unsigned char XtEnum;
```

```

typedef unsigned int    Cardinal;
typedef unsigned short  Dimension; /* Size in pixels */
typedef short          Position;   /* Offset from 0 coordinate */
typedef char*          XtPointer;

/* The type Opaque is NOT part of the Xt standard, do NOT use it. */
/* (It remains here only for backward compatibility.) */
typedef XtPointer      Opaque;
typedef struct _TranslationData *XtTranslations;
typedef struct _TranslationData *XtAccelerators;
typedef unsigned int    Modifiers;
typedef void           *XtActionProc();
typedef XtActionProc* XtBoundActions;
typedef struct _XtActionsRec{String string;XtActionProc proc; XtActionsRec;

typedef enum {
/* address mode          parameter representation */
/* ----- */
/* ----- */
    XtAddress,          /* address */
    XtBaseOffset,       /* offset */
    XtImmediate,        /* constant */
    XtResourceString,   /* resource name string */
    XtResourceQuark,    /* resource name quark */
    XtWidgetBaseOffset, /* offset from ancestor */
    XtProcedureArg      /* procedure to invoke */
} XtAddressMode;

typedef struct {
    XtAddressMode address_mode;
    XtPointer      address_id;
    Cardinal       size;
} XtConvertArgRec, *XtConvertArgList;

typedef void (*XtConvertArgProc)();

typedef struct {
    XtGeometryMask request_mode;
    Position x, y;
    Dimension width, height, border_width;
    Widget sibling;
    int stack_mode; /* Above, Below, TopIf, BottomIf, Opposite, DontChange */
} XtWidgetGeometry;

/* Additions to Xlib geometry requests: ask what would happen, don't do it */
#define XtCWQueryOnly (1 << 7)

/* Additions to Xlib stack modes: don't change stack order */
#define XtSMDontChange 5

typedef void (*XtConverter)(); /* obsolete */
typedef Boolean (*XtTypeConverter)();
typedef void (*XtDestructor)();
typedef Opaque XtCacheRef;
typedef Opaque XtActionHookId;
typedef void (*XtActionHookProc)();
typedef void (*XtKeyProc)();
typedef void (*XtCaseProc)();
typedef void (*XtEventHandler)();
typedef unsigned long EventMask;

```

```

typedef enum {XtListHead, XtListTail } XtListPosition;
typedef unsigned long   XtInputMask;

#define XtInputNoneMask      0L
#define XtInputReadMask     (1L<<0)
#define XtInputWriteMask    (1L<<1)
#define XtInputExceptMask   (1L<<2)

typedef void (*XtTimerCallbackProc)();
typedef void (*XtInputCallbackProc)();

typedef struct { String      name; XtArgVal  value;} Arg, *ArgList;
typedef XtPointer      XtVarArgsList;
typedef void (*XtCallbackProc)();

typedef struct _XtCallbackRec {
    XtCallbackProc  callback;
    XtPointer       closure;
} XtCallbackRec, *XtCallbackList;

typedef enum {
    XtCallbackNoList,
    XtCallbackHasNone,
    XtCallbackHasSome
} XtCallbackStatus;

typedef enum {
    XtGeometryYes,      /* Request accepted. */
    XtGeometryNo,       /* Request denied. */
    XtGeometryAlmost,   /* Request denied, but willing to take replyBox. */
    XtGeometryDone      /* Request accepted and done. */
} XtGeometryResult;

typedef enum {XtGrabNone, XtGrabNonexclusive, XtGrabExclusive} XtGrabKind;

typedef struct {
    Widget  shell_widget;
    Widget  enable_widget;
} XtPopdownIDRec, *XtPopdownID;

typedef struct _XtResource {
    String      resource_name; /* Resource name */
    String      resource_class; /* Resource class */
    String      resource_type; /* Representation type desired */
    Cardinal    resource_size; /* Size in bytes of representation */
    Cardinal    resource_offset; /* Offset from base to put resource value */
    String      default_type; /* representation type of specified default */
    XtPointer    default_addr; /* Address of default resource */
} XtResource, *XtResourceList;

typedef void (*XtResourceDefaultProc)();
typedef String (*XtLanguageProc)();
typedef void (*XtErrorMsgHandler)();
typedef void (*XtErrorHandler)();
typedef void (*XtCreatePopupChildProc)();
typedef Boolean (*XtWorkProc)();
typedef struct {
    char      match;
    String     substitution;

```

```
} SubstitutionRec, *Substitution;

typedef Boolean (*XtFilePredicate)();
typedef XtPointer XtRequestId;
typedef Boolean (*XtConvertSelectionProc)();
typedef void (*XtLoseSelectionProc)();
typedef void (*XtSelectionDoneProc)();
typedef void (*XtSelectionCallbackProc)();
typedef void (*XtLoseSelectionIncrProc)();
typedef void (*XtSelectionDoneIncrProc)();
typedef Boolean (*XtConvertSelectionIncrProc)();
typedef void (*XtCancelConvertSelectionProc)();

/* Event Management */
/* XtAllEvents is valid only for XtRemoveEventHandler and * XtRemoveRawEventHandler;
don't use it to select events! */
#define XtAllEvents ((EventMask) -1L)

/* Event Gathering Routines */
#define XtIMXEvent          1
#define XtIMTimer           2
#define XtIMAlternateInput  4
#define XtIMAll (XtIMXEvent | XtIMTimer | XtIMAlternateInput)

/* Vararg lists */
#define XtVaNestedList     "XtVaNestedList"
#define XtVaTypedArg       "XtVaTypedArg"

/* Toolkit initialization */
#define XtUnspecifiedPixmap ((Pixmap)2)
#define XtUnspecifiedShellInt (-1)
#define XtUnspecifiedWindow ((Window)2)
#define XtUnspecifiedWindowGroup ((Window)3)
#define XtDefaultForeground  "XtDefaultForeground"
#define XtDefaultBackground  "XtDefaultBackground"
#define XtDefaultFont        "XtDefaultFont"
#define XtDefaultFontSet     "XtDefaultFontSet"

/* Selections */
#define XT_CONVERT_FAIL (Atom)0x80000001
```

Figure 10-7: Manifest Constants and Data Types from <X11/Object.h>

```
typedef struct _ObjectRec *Object;
typedef struct _ObjectClassRec *ObjectClass;
```

Figure 10-8: Manifest Constants and Data Types from <X11/RectObj.h>

```
typedef struct _RectObjRec *RectObj;
typedef struct _RectObjClassRec *RectObjClass;
```

Figure 10-9: Manifest Constants and Data Types from <X11/Shell.h>

```
/* Shell Widget */
/* Shell-specific resources names, classes, and a representation type. */
```



```
/* The string definitions are automatically generated. */
```

```
#define XtNIconName "iconName"
#define XtCIconName "IconName"
#define XtNIconPixmap "iconPixmap"
#define XtCIconPixmap "IconPixmap"
#define XtNIconWindow "iconWindow"
#define XtCIconWindow "IconWindow"
#define XtNIconMask "iconMask"
#define XtCIconMask "IconMask"
#define XtNwindowGroup "windowGroup"
#define XtCWindowGroup "WindowGroup"
#define XtNvisual "visual"
#define XtCVisual "Visual"
#define XtNtitleEncoding "titleEncoding"
#define XtCTitleEncoding "TitleEncoding"
#define XtNsaveUnder "saveUnder"
#define XtCSaveUnder "SaveUnder"
#define XtNtransient "transient"
#define XtCTransient "Transient"
#define XtNoverrideRedirect "overrideRedirect"
#define XtCOverrideRedirect "OverrideRedirect"
#define XtNtransientFor "transientFor"
#define XtCTransientFor "TransientFor"
#define XtNIconNameEncoding "iconNameEncoding"
#define XtCIconNameEncoding "IconNameEncoding"
#define XtNallowShellResize "allowShellResize"
#define XtCAllowShellResize "AllowShellResize"
#define XtNcreatePopupChildProc "createPopupChildProc"
#define XtCCreatePopupChildProc "CreatePopupChildProc"
#define XtNtitle "title"
#define XtCTitle "Title"
#define XtRAtom "Atom"
#define XtNargc "argc"
#define XtCArgc "Argc"
#define XtNargv "argv"
#define XtCArgv "Argv"
#define XtNiconX "iconX"
#define XtCIconX "IconX"
#define XtNiconY "iconY"
#define XtCIconY "IconY"
#define XtNinput "input"
#define XtCInput "Input"
#define XtNiconic "iconic"
#define XtCIconic "Iconic"
#define XtNinitialState "initialState"
#define XtCInitialState "InitialState"
#define XtNgeometry "geometry"
#define XtCGeometry "Geometry"
#define XtNbaseWidth "baseWidth"
#define XtCBaseWidth "BaseWidth"
#define XtNbaseHeight "baseHeight"
#define XtCBaseHeight "BaseHeight"
#define XtNwinGravity "winGravity"
#define XtCWinGravity "WinGravity"
#define XtNminWidth "minWidth"
#define XtCMinWidth "MinWidth"
#define XtNminHeight "minHeight"
#define XtCMinHeight "MinHeight"
```

```
#define XtNmaxWidth "maxWidth"
#define XtCMaxWidth "MaxWidth"
#define XtNmaxHeight "maxHeight"
#define XtCMaxHeight "MaxHeight"
#define XtNwidthInc "widthInc"
#define XtCWidthInc "WidthInc"
#define XtNheightInc "heightInc"
#define XtCHeightInc "HeightInc"
#define XtNminAspectY "minAspectY"
#define XtCMinAspectY "MinAspectY"
#define XtNmaxAspectY "maxAspectY"
#define XtCMaxAspectY "MaxAspectY"
#define XtNminAspectX "minAspectX"
#define XtCMinAspectX "MinAspectX"
#define XtNmaxAspectX "maxAspectX"
#define XtCMaxAspectX "MaxAspectX"
#define XtNwmTimeout "wmTimeout"
#define XtCwmTimeout "WmTimeout"
#define XtNwaitForWm "waitforwm"
#define XtCWaitForWm "Waitforwm"

/* Class record constants */

typedef struct _ShellClassRec *ShellWidgetClass;
typedef struct _OverrideShellClassRec *OverrideShellWidgetClass;
typedef struct _WMShellClassRec *WMShellWidgetClass;
typedef struct _TransientShellClassRec *TransientShellWidgetClass;
typedef struct _TopLevelShellClassRec *TopLevelShellWidgetClass;
typedef struct _ApplicationShellClassRec *ApplicationShellWidgetClass;
```

Figure 10-10: Manifest Constants and Data Types from <X11/StringDefs.h>

```
#define XtNaccelerators "accelerators"
#define XtNallowHoriz "allowHoriz"
#define XtNallowVert "allowVert"
#define XtNancestorSensitive "ancestorSensitive"
#define XtNbackground "background"
#define XtNbackgroundPixmap "backgroundPixmap"
#define XtNbitmap "bitmap"
#define XtNborderColor "borderColor"
#define XtNborder "borderColor"
#define XtNborderPixmap "borderPixmap"
#define XtNborderWidth "borderWidth"
#define XtNcallback "callback"
#define XtNchildren "children"
#define XtNcolormap "colormap"
#define XtNdepth "depth"
#define XtNdestroyCallback "destroyCallback"
#define XtNeditType "editType"
#define XtNfile "file"
#define XtNfont "font"
#define XtNforceBars "forceBars"
#define XtNforeground "foreground"
#define XtNfunction "function"
#define XtNheight "height"
#define XtNhighlight "highlight"
#define XtNhSpace "hSpace"
```

```

#define XtNindex "index"
#define XtNinitialResourcesPersistent "initialResourcesPersistent"
#define XtNinnerHeight "innerHeight"
#define XtNinnerWidth "innerWidth"
#define XtNinnerWindow "innerWindow"
#define XtNinsertPosition "insertPosition"
#define XtNinternalHeight "internalHeight"
#define XtNinternalWidth "internalWidth"
#define XtNjumpProc "jumpProc"
#define XtNjustify "justify"
#define XtNknobHeight "knobHeight"
#define XtNknobIndent "knobIndent"
#define XtNknobPixel "knobPixel"
#define XtNknobWidth "knobWidth"
#define XtNlabel "label"
#define XtNlength "length"
#define XtNlowerRight "lowerRight"
#define XtNmappedWhenManaged "mappedWhenManaged"
#define XtNmenuEntry "menuEntry"
#define XtNname "name"
#define XtNnotify "notify"
#define XtNnumChildren "numChildren"
#define XtNorientation "orientation"
#define XtNparameter "parameter"
#define XtNpixmap "pixmap"
#define XtNpopupCallback "popupCallback"
#define XtNpopdownCallback "popdownCallback"
#define XtNresize "resize"
#define XtNreverseVideo "reverseVideo"
#define XtNscreen "screen"
#define XtNscrollProc "scrollProc"
#define XtNscrollDCursor "scrollDCursor"
#define XtNscrollHCursor "scrollHCursor"
#define XtNscrollLCursor "scrollLCursor"
#define XtNscrollRCursor "scrollRCursor"
#define XtNscrollUCursor "scrollUCursor"
#define XtNscrollVCursor "scrollVCursor"
#define XtNselection "selection"
#define XtNselectionArray "selectionArray"
#define XtNsensitive "sensitive"
#define XtNshown "shown"
#define XtNspace "space"
#define XtNstring "string"
#define XtNtextOptions "textOptions"
#define XtNtextSink "textSink"
#define XtNtextSource "textSource"
#define XtNthickness "thickness"
#define XtNthumb "thumb"
#define XtNthumbProc "thumbProc"
#define XtNtop "top"
#define XtNtranslations "translations"
#define XtNunrealizeCallback "unrealizeCallback"
#define XtNupdate "update"
#define XtNuseBottom "useBottom"
#define XtNuseRight "useRight"
#define XtNvalue "value"
#define XtNvSpace "vSpace"
#define XtNwidth "width"
#define XtNwindow "window"

```

```

#define XtNx "x"
#define XtNy "y"
#define XtCAccelerators "Accelerators"
#define XtCBackground "Background"
#define XtCBitmap "Bitmap"
#define XtCBoolean "Boolean"
#define XtCBorderColor "BorderColor"
#define XtCBorderWidth "BorderWidth"
#define XtCCallback "Callback"
#define XtCColormap "Colormap"
#define XtCColor "Color"
#define XtCCursor "Cursor"
#define XtCDepth "Depth"
#define XtCEditType "EditType"
#define XtCEventBindings "EventBindings"
#define XtCFile "File"
#define XtCFont "Font"
#define XtCForeground "Foreground"
#define XtCFraction "Fraction"
#define XtCFunction "Function"
#define XtCHeight "Height"
#define XtCHSpace "HSpace"
#define XtCIndex "Index"
#define XtCInitialResourcesPersistent "InitialResourcesPersistent"
#define XtCInsertPosition "InsertPosition"
#define XtCInterval "Interval"
#define XtCJustify "Justify"
#define XtCKnobIndent "KnobIndent"
#define XtCKnobPixel "KnobPixel"
#define XtCLabel "Label"
#define XtCLength "Length"
#define XtCMappedWhenManaged "MappedWhenManaged"
#define XtCMargin "Margin"
#define XtCMenuEntry "MenuEntry"
#define XtCNotify "Notify"
#define XtCOrientation "Orientation"
#define XtCParameter "Parameter"
#define XtCPixmap "Pixmap"
#define XtCPosition "Position"
#define XtCReadOnly "ReadOnly"
#define XtCResize "Resize"
#define XtCReverseVideo "ReverseVideo"
#define XtCScreen "Screen"
#define XtCScrollProc "ScrollProc"
#define XtCScrollDCursor "ScrollDCursor"
#define XtCScrollHCursor "ScrollHCursor"
#define XtCScrollLCursor "ScrollLCursor"
#define XtCScrollRCursor "ScrollRCursor"
#define XtCScrollUCursor "ScrollUCursor"
#define XtCScrollVCursor "ScrollVCursor"
#define XtCSelection "Selection"
#define XtCSensitive "Sensitive"
#define XtCSelectionArray "SelectionArray"
#define XtCSpace "Space"
#define XtCString "String"
#define XtCTextOptions "TextOptions"
#define XtCTextPosition "TextPosition"
#define XtCTextSink "TextSink"
#define XtCTextSource "TextSource"

```

```

#define XtCThickness "Thickness"
#define XtCThumb "Thumb"
#define XtCTranslations "Translations"
#define XtCValue "Value"
#define XtCVSpace "VSpace"
#define XtCWidth "Width"
#define XtCWindow "Window"
#define XtCX "X"
#define XtCY "Y"
#define XtRAcceleratorTable "AcceleratorTable"
#define XtRAtom "Atom"
#define XtRBitmap "Bitmap"
#define XtRBool "Bool"
#define XtRBoolean "Boolean"
#define XtRCallback "Callback"
#define XtRCallProc "CallProc"
#define XtRCardinal "Cardinal"
#define XtRColor "Color"
#define XtRColormap "Colormap"
#define XtRCursor "Cursor"
#define XtRDimension "Dimension"
#define XtRDisplay "Display"
#define XtREditMode "EditMode"
#define XtREnum "Enum"
#define XtRFile "File"
#define XtRFloat "Float"
#define XtRFont "Font"
#define XtRFontStruct "FontStruct"
#define XtRFunction "Function"
#define XtRGeometry "Geometry"
#define XtRImmediate "Immediate"
#define XtRInitialState "InitialState"
#define XtRInt "Int"
#define XtRJustify "Justify"
#define XtRLongBoolean "Bool"
#define XtRObject "Object"
#define XtROrientation "Orientation"
#define XtRPixel "Pixel"
#define XtRPixmap "Pixmap"
#define XtRPointer "Pointer"
#define XtRPosition "Position"
#define XtRScreen "Screen"
#define XtRShort "Short"
#define XtRString "String"
#define XtRStringArray "StringArray"
#define XtRStringTable "StringTable"
#define XtRUnsignedChar "UnsignedChar"
#define XtRTranslationTable "TranslationTable"
#define XtRVisual "Visual"
#define XtRWidget "Widget"
#define XtRWidgetClass "WidgetClass"
#define XtRWidgetList "WidgetList"
#define XtRWindow "Window"
#define XtEoff "off"
#define XtEfalse "false"
#define XtEno "no"
#define XtEon "on"
#define XtEtrue "true"
#define XtEyes "yes"

```

```
#define XtEvertical "vertical"
#define XtEhorizontal "horizontal"
#define XtEtextRead "read"
#define XtEtextAppend "append"
#define XtEtextEdit "edit"
#define XtExtdefaultbackground "xtdefaultbackground"
#define XtExtdefaultforeground "xtdefaultforeground"
#define XtExtdefaultfont "xtdefaultfont"
#define XtNfontSet "fontSet"
#define XtRFontSet "FontSet"
#define XtCFontSet "FontSet"
```

Figure 10-11: Manifest Constants and Data Types from <X11/Vendor.h>

```
typedef struct _VendorShellClassRec *VendorShellWidgetClass;
```

Subclassing Xt Widgets

Figure 10-12 through Figure 10-19 are intended to be used by widget programmers only. This information is included so widget programmers can subclass Xt widgets. This facilities are provided in the X Toolkit for the purpose of creating new widgets based on the Toolkit widgets. They are expected to be used only by code within widgets, not by code within ordinary applications. The structure of widgets should be opaque to the applications that use widgets but do not define them.

The subclassing of widgets is only supported for the Xt widgets. It is not supporting for either the OLIT widget set or the Motif widget set.

Figure 10-12: Manifest Constants and Data Types from <X11/CompositeP.h>

```
/* Additional instance fields for widgets of (sub)class 'Composite' */

typedef struct _CompositePart {
    WidgetList    children;          /* array of ALL widget children      */
    Cardinal      num_children;      /* total number of widget children   */
    Cardinal      num_slots;         /* number of slots in children array */
    XtOrderProc   insert_position;   /* compute position of new child     */
} CompositePart, *CompositePtr;

typedef struct _CompositeRec {
    CorePart      core;
    CompositePart composite;
} CompositeRec;

/* Additional class fields for widgets of (sub)class 'Composite' */

typedef struct _CompositeClassPart {
    XtGeometryHandler geometry_manager; /* geometry manager for children */
    XtWidgetProc      change_managed;  /* change managed state of child */
    XtWidgetProc      insert_child;    /* physically add child to parent */
    XtWidgetProc      delete_child;    /* physically remove child        */
    XtPointer          extension;       /* pointer to extension record     */
} CompositeClassPart, *CompositePartPtr;

typedef struct {
    XtPointer next_extension; /* 1st 4 mandated for all extension records */
    XrmQuark  record_type;    /* NULLQUARK; on CompositeClassPart */
    long      version;        /* must be XtCompositeExtensionVersion */
    Cardinal  record_size;    /* sizeof(CompositeClassExtensionRec) */
    Boolean    accepts_objects;
} CompositeClassExtensionRec, *CompositeClassExtension;

typedef struct _CompositeClassRec {
    CoreClassPart      core_class;
    CompositeClassPart composite_class;
} CompositeClassRec;

#define XtCompositeExtensionVersion 1L
#define XtInheritGeometryManager ((XtGeometryHandler) _XtInherit)
#define XtInheritChangeManaged ((XtWidgetProc) _XtInherit)
#define XtInheritInsertChild ((XtWidgetProc) _XtInherit)
#define XtInheritDeleteChild ((XtWidgetProc) _XtInherit)
```

Figure 10-13: Manifest Constants and Data Types from <X11/ConstrainP.h>

```
typedef struct _ConstraintPart {
    XtPointer mumble;          /* No new fields, keep C compiler happy */
} ConstraintPart;

typedef struct _ConstraintRec {
    CorePart      core;
    CompositePart composite;
    ConstraintPart constraint;
} ConstraintRec, *ConstraintWidget;

typedef struct _ConstraintClassPart {
    XtResourceList resources;      /* constraint resource list          */
    Cardinal num_resources;        /* number of constraints in list     */
    Cardinal constraint_size;      /* size of constraint record         */
    XtInitProc initialize;         /* constraint initialization          */
    XtWidgetProc destroy;         /* constraint destroy proc           */
    XtSetValuesFunc set_values;    /* constraint set_values proc        */
    XtPointer extension;          /* pointer to extension record       */
} ConstraintClassPart;

typedef struct {
    XtPointer next_extension;      /* 1st 4 mandated for all extension records */
    XrmQuark record_type;         /* NULLQUARK; on ConstraintClassPart */
    long version;                 /* must be XtConstraintExtensionVersion */
    Cardinal record_size;         /* sizeof(ConstraintClassExtensionRec) */
    XtArgsProc get_values_hook;
} ConstraintClassExtensionRec, *ConstraintClassExtension;

typedef struct _ConstraintClassRec {
    CoreClassPart      core_class;
    CompositeClassPart composite_class;
    ConstraintClassPart constraint_class;
} ConstraintClassRec;

#define XtConstraintExtensionVersion 1L
```

Figure 10-14: Manifest Constants and Data Types from <X11/CoreP.h>

```
#define XtInheritTranslations ((String) &_XtInheritTranslations)
#define XtInheritRealize ((XtRealizeProc) _XtInherit)
#define XtInheritResize ((XtWidgetProc) _XtInherit)
#define XtInheritExpose ((XtExposeProc) _XtInherit)
#define XtInheritSetValuesAlmost ((XtAlmostProc) _XtInherit)
#define XtInheritAcceptFocus ((XtAcceptFocusProc) _XtInherit)
#define XtInheritQueryGeometry ((XtGeometryHandler) _XtInherit)
#define XtInheritDisplayAccelerator ((XtStringProc) _XtInherit)

/* Widget Core Data Structures*/

typedef struct _CorePart {
    Widget      self;          /* pointer to widget itself          */
    WidgetClass widget_class;   /* pointer to Widget's ClassRec       */
    Widget      parent;        /* parent widget                     */
    XrmName      xrm_name;     /* widget resource name quarkified    */
}
```

```

Boolean      being_destroyed; /* marked for destroy */
XtCallbackList destroy_callbacks; /* who to call when widget destroyed */
XtPointer     constraints; /* constraint record */
Position      x, y; /* window position */
Dimension      width, height; /* window dimensions */
Dimension      border_width; /* window border width */
Boolean        managed; /* is widget geometry managed? */
Boolean        sensitive; /* is widget sensitive to user events */
Boolean        ancestor_sensitive; /* are all ancestors sensitive? */
XtEventTable   event_table; /* private to event dispatcher */
XtTMRrec       tm; /* translation management */
XtTranslations accelerators; /* accelerator translations */
Pixel          border_pixel; /* window border pixel */
Pixmap         border_pixmap; /* window border pixmap or NULL */
WidgetList     popup_list; /* list of popups */
Cardinal       num_popups; /* how many popups */
String         name; /* widget resource name */
Screen         *screen; /* window's screen */
Colormap       colormap; /* colormap */
Window         window; /* window ID */
Cardinal       depth; /* number of planes in window */
Pixel          background_pixel; /* window background pixel */
Pixmap         background_pixmap; /* window background pixmap or NULL */
Boolean        visible; /* is window mapped and not occluded? */
Boolean        mapped_when_managed; /* map window if it's managed? */
} CorePart;

typedef struct _WidgetRec {
    CorePart core;
} WidgetRec, CoreRec;

/* Core Class Structure. Widgets, regardless of their class, will have
 * these fields. All widgets of a given class will have the same values
 * for these fields. Widgets of a given class may also have additional
 * common fields. These additional fields are included in incremental
 * class structures, such as CommandClass.
 *
 * The fields that are specific to this subclass, as opposed to fields that
 * are part of the superclass, are called "subclass fields" below. Many
 * procedures are responsible only for the subclass fields, and not for
 * any superclass fields.*/

typedef struct _CoreClassPart {
    WidgetClass superclass; /* pointer to superclass ClassRec */
    String      class_name; /* widget resource class name */
    Cardinal     widget_size; /* size in bytes of widget record */
    XtProc       class_initialize; /* class initialization proc */
    XtWidgetClassProc class_part_initialize; /* dynamic initialization */
    XtEnum       class_inited; /* has class been initialized? */
    XtInitProc   initialize; /* initialize subclass fields */
    XtArgsProc   initialize_hook; /* notify that initialize called */
    XtRealizeProc realize; /* XCreateWindow for widget */
    XtActionList actions; /* widget semantics name to proc map */
    Cardinal     num_actions; /* number of entries in actions */
    XtResourceList resources; /* resources for subclass fields */
    Cardinal     num_resources; /* number of entries in resources */
    XrmClass     xrm_class; /* resource class quarkified */
    Boolean      compress_motion; /* compress MotionNotify for widget */
    XtEnum       compress_exposure; /* compress Expose events for widget */

```

```

        Boolean        compress_enterleave; /* compress enter and leave events */
        Boolean        visible_interest;    /* select for VisibilityNotify */
        XtWidgetProc    destroy;             /* free data for subclass pointers */
        XtWidgetProc    resize;             /* geom manager changed widget size */
        XtExposeProc    expose;             /* redisplay window */
        XtSetValuesFunc set_values;         /* set subclass resource values */
        XtArgsFunc      set_values_hook;    /* notify that set_values called */
        XtAlmostProc    set_values_almost; /* set_values got "Almost" geo reply */
        XtArgsProc      get_values_hook;    /* notify that get_values called */
        XtAcceptFocusProc accept_focus;    /* assign input focus to widget */
        XtVersionType    version;          /* version of intrinsics used */
        XtPointer        callback_private; /* list of callback offsets */
        String           tm_table;          /* state machine */
        XtGeometryHandler query_geometry; /* return preferred geometry */
        XtStringProc     display_accelerator; /* display your accelerator */
        XtPointer        extension;         /* pointer to extension record */
    } CoreClassPart;

typedef struct _WidgetClassRec {
    CoreClassPart core_class;
} WidgetClassRec, CoreClassRec;

#define coreClassRec widgetClassRec

```

Figure 10-15: Manifest Constants and Data Types from <X11/IntrinsicP.h>

```

typedef struct {
    XrmQuark    xrm_name;          /* Resource name quark */
    XrmQuark    xrm_class;        /* Resource class quark */
    XrmQuark    xrm_type;         /* Resource representation type quark */
    Cardinal    xrm_size;         /* Size in bytes of representation */
    long int    xrm_offset;       /* -offset-1 */
    XrmQuark    xrm_default_type; /* Default representation type quark */
    XtPointer    xrm_default_addr; /* Default resource address */
} XrmResource, *XrmResourceList;

typedef unsigned long XtVersionType;

#define XT_VERSION 11
#define XT_REVISION 5
#define XtVersion (XT_VERSION * 1000 + XT_REVISION)
#define XtVersionDontCheck 0

typedef void (*XtProc)();
typedef void (*XtWidgetClassProc)();
typedef void (*XtWidgetProc)();
typedef Boolean (*XtAcceptFocusProc)();
typedef void (*XtArgsProc)();
typedef void (*XtInitProc)();
typedef Boolean (*XtSetValuesFunc)();
typedef Boolean (*XtArgsFunc)();
typedef void (*XtAlmostProc)();
typedef void (*XtExposeProc)();

/* compress_exposure options*/
#define XtExposeNoCompress ((XtEnum)False)
#define XtExposeCompressSeries ((XtEnum)True)

```

```

#define XtExposeCompressMultiple      2
#define XtExposeCompressMaximal      3

/* modifiers */
#define XtExposeGraphicsExpose        0x10
#define XtExposeGraphicsExposeMerged  0x20
#define XtExposeNoExpose               0x40

typedef void (*XtRealizeProc)();
typedef XtGeometryResult (*XtGeometryHandler)();
typedef void (*XtStringProc)();

typedef struct _XtTMRc {
    XtTranslations  translations;      /* private to Translation Manager */
    XtBoundActions  proc_table;        /* procedure bindings for actions */
    struct _XtStateRec *current_state; /* Translation Manager state ptr */
    unsigned long   lastEventTime;
} XtTMRc, *XtTM;

extern Widget _XtWindowedAncestor( /* internal; implementation-dependent */);
extern void _XtInherit();
extern void XtCreateWindow();
extern void XtResizeWidget();
extern void XtMoveWidget();
extern void XtConfigureWidget();
extern void XtResizeWindow();

```

Figure 10-16: Data Types from <X11/ObjectP.h>

```

/*Object Instance Data Structures */
/* these fields match CorePart and can not be changed */

typedef struct _ObjectPart {
    Widget      self;                /* pointer to widget itself */
    WidgetClass  widget_class;        /* pointer to Widget's ClassRec */
    Widget      parent;              /* parent widget */
    XrmName      xrm_name;            /* widget resource name quarkified */
    Boolean      being_destroyed;     /* marked for destroy */
    XtCallbackList destroy_callbacks; /* who to call when widget destroyed */
    XtPointer    constraints;         /* constraint record */
} ObjectPart;

typedef struct _ObjectRec {
    ObjectPart  object;
} ObjectRec;

/*Object Class Data Structures */
/* these fields match CoreClassPart and can not be changed */
/* ideally these structures would only contain the fields required;
   but because the CoreClassPart cannot be changed at this late date
   extraneous fields are necessary to make the field offsets match */

typedef struct _ObjectClassPart {
    WidgetClass  superclass;          /* pointer to superclass ClassRec */
    String       class_name;           /* widget resource class name */
    Cardinal     widget_size;          /* size in bytes of widget record */
    XtProc       class_initialize;     /* class initialization proc */
}

```

```

XtWidgetClassProc class_part_initialize; /* dynamic initialization */
XtEnum          class_initd;           /* has class been initialized? */
XtInitProc      initialize;            /* initialize subclass fields */
XtArgsProc      initialize_hook;       /* notify that initialize called */
XtProc          obj1;                  /* NULL */
XtProc          obj2;                  /* NULL */
Cardinal        obj3;                  /* NULL */
XtResourceList  resources;             /* resources for subclass fields */
Cardinal        num_resources;         /* number of entries in resources */
XrmClass        xrm_class;             /* resource class quarkified */
Boolean         obj4;                  /* NULL */
Boolean         obj5;                  /* NULL */
Boolean         obj6;                  /* NULL */
Boolean         obj7;                  /* NULL */
XtWidgetProc    destroy;               /* free data for subclass pointers */
XtProc          obj8;                  /* NULL */
XtProc          obj9;                  /* NULL */
XtSetValuesFunc set_values;            /* set subclass resource values */
XtArgsFunc      set_values_hook;       /* notify that set_values called */
XtProc          obj10;                 /* NULL */
XtArgsProc      get_values_hook;       /* notify that get_values called */
XtProc          obj11;                 /* NULL */
XtVersionType   version;               /* version of intrinsics used */
XtPointer        callback_private;     /* list of callback offsets */
String          obj12;                 /* NULL */
XtProc          obj13;                 /* NULL */
XtProc          obj14;                 /* NULL */
XtPointer        extension;            /* pointer to extension record */
}ObjectClassPart;

typedef struct _ObjectClassRec {
    ObjectClassPart object_class;
} ObjectClassRec;

```

Figure 10-17: Data Types from <X11/RectObjP.h>

```

/* Rectangle Object Instance Data Structures */
/* these fields match CorePart and can not be changed */

typedef struct _RectObjPart {
    Position      x, y;                /* rectangle position */
    Dimension      width, height;      /* rectangle dimensions */
    Dimension      border_width;       /* rectangle border width */
    Boolean        managed;             /* is widget geometry managed? */
    Boolean        sensitive;           /* is widget sensitive to user events? */
    Boolean        ancestor_sensitive; /* are all ancestors sensitive? */
}RectObjPart;

typedef struct _RectObjRec {
    ObjectPart object;
    RectObjPart rectangle;
} RectObjRec;

/* Rectangle Object Class Data Structures */
/* these fields match CoreClassPart and can not be changed */
/* ideally these structures would only contain the fields required;
   but because the CoreClassPart cannot be changed at this late date
   extraneous fields are necessary to make the field offsets match */

```

```
typedef struct _RectObjClassPart {
    WidgetClass    superclass;           /* pointer to superclass ClassRec */
    String         class_name;           /* widget resource class name */
    Cardinal       widget_size;          /* size in bytes of widget record */
    XtProc         class_initialize;      /* class initialization proc */
    XtWidgetClassProc class_part_initialize; /* dynamic initialization */
    XtEnum         class_inited;          /* has class been initialized? */
    XtInitProc     initialize;            /* initialize subclass fields */
    XtArgsProc     initialize_hook;       /* notify that initialize called */
    XtProc         rect1;                 /* NULL */
    XtPointer      rect2;                 /* NULL */
    Cardinal       rect3;                 /* NULL */
    XtResourceList resources;             /* resources for subclass fields */
    Cardinal       num_resources;         /* number of entries in resources */
    XrmClass       xrm_class;             /* resource class quarkified */
    Boolean        rect4;                 /* NULL */
    Boolean        rect5;                 /* NULL */
    Boolean        rect6;                 /* NULL */
    Boolean        rect7;                 /* NULL */
    XtWidgetProc   destroy;               /* free data for subclass pointers */
    XtWidgetProc   resize;                /* geom manager changed widget size */
    XtExposeProc   expose;                /* redisplay rectangle */
    XtSetValuesFunc set_values;           /* set subclass resource values */
    XtArgsFunc     set_values_hook;       /* notify that set_values called */
    XtAlmostProc   set_values_almost;     /* set values almost for geometry */
    XtArgsProc     get_values_hook;       /* notify that get_values called */
    XtProc         rect9;                 /* NULL */
    XtVersionType  version;               /* version of intrinsics used */
    XtPointer      callback_private;      /* list of callback offsets */
    String         rect10;                /* NULL */
    XtGeometryHandler query_geometry;     /* return preferred geometry */
    XtProc         rect11;                /* NULL */
    XtPointer      extension;             /* pointer to extension record */
} RectObjClassPart;

typedef struct _RectObjClassRec {
    RectObjClassPart rect_class;
} RectObjClassRec;
```

Figure 10-18: Manifest Constants and Data Types from <X11/Shell.h>

```
/* Shell Widget Private Data */
/* New fields for the Shell widget class record */

typedef struct {XtPointer extension;} ShellClassPart;

typedef struct {
    XtPointer      next_extension;
    XrmQuark       record_type;
    long           version;
    Cardinal       record_size;
    XtGeometryHandler root_geometry_manager;
} ShellClassExtensionRec, *ShellClassExtension;

#define XtShellExtensionVersion 1L
#define XtInheritRootGeometryManager ((XtGeometryHandler)_XtInherit)
```

```
typedef struct _ShellClassRec {
    CoreClassPart      core_class;
    CompositeClassPart composite_class;
    ShellClassPart     shell_class;
} ShellClassRec;

/* New fields for the shell widget */
typedef struct {
    char                *geometry;
    XtCreatePopupChildProc create_popup_child_proc;
    XtGrabKind          grab_kind;
    Boolean             spring_loaded;
    Boolean             popped_up;
    Boolean             allow_shell_resize;
    Boolean             client_specified; /* re-using old name */
#define _XtShellPositionValid      (Boolean)(1<<0)
#define _XtShellNotReparented     (Boolean)(1<<1)
#define _XtShellPPositionOK       (Boolean)(1<<2)
#define _XtShellGeometryParsed    (Boolean)(1<<3)
    Boolean             save_under;
    Boolean             override_redirect;
    XtCallbackList      popup_callback;
    XtCallbackList      popdown_callback;
    Visual*             visual;
} ShellPart;

typedef struct {
    CorePart            core;
    CompositePart       composite;
    ShellPart           shell;
} ShellRec, *ShellWidget;

/* OverrideShell Widget Private Data */
/* New fields for the OverrideShell widget class record */
typedef struct { XtPointer extension;} OverrideShellClassPart;

typedef struct _OverrideShellClassRec {
    CoreClassPart      core_class;
    CompositeClassPart composite_class;
    ShellClassPart     shell_class;
    OverrideShellClassPart override_shell_class;
} OverrideShellClassRec;

/* No new fields for the override shell widget */
typedef struct {int frabjous;} OverrideShellPart;

typedef struct {
    CorePart            core;
    CompositePart       composite;
    ShellPart           shell;
    OverrideShellPart    override;
} OverrideShellRec, *OverrideShellWidget;

/* WMShell Widget Private Data */
/* New fields for the WMShell widget class record */
typedef struct { XtPointer extension;} WMShellClassPart;

typedef struct _WMShellClassRec {
    CoreClassPart      core_class;
```

```

        CompositeClassPart composite_class;
        ShellClassPart shell_class;
        WMShellClassPart wm_shell_class;
    } WMShellClassRec;

/* New fields for the WM shell widget */
typedef struct {
    char        *title;
    int         wm_timeout;
    Boolean      wait_for_wm;
    Boolean      transient;
    Atom         wm_configure_denied, wm_moved;
    struct _OldXSizeHints { /* pre-R4 Xlib structure */
        long flags;
        int x, y;
        int width, height;
        int min_width, min_height;
        int max_width, max_height;
        int width_inc, height_inc;
        struct {int x; int y;} min_aspect, max_aspect;
    } size_hints;
    XWMHints     wm_hints;
    int base_width, base_height;
    int win_gravity;
    Atom title_encoding;
} WMShellPart;

typedef struct {
    CorePart      core;
    CompositePart composite;
    ShellPart     shell;
    WMShellPart   wm;
} WMShellRec, *WMShellWidget;

/* TransientShell Widget Private Data */
/* New fields for the TransientShell widget class record */
typedef struct { XtPointer      extension;} TransientShellClassPart;

typedef struct _TransientShellClassRec {
    CoreClassPart   core_class;
    CompositeClassPart composite_class;
    ShellClassPart  shell_class;
    WMShellClassPart  wm_shell_class;
    VendorShellClassPart vendor_shell_class;
    TransientShellClassPart transient_shell_class;
} TransientShellClassRec;

/* New fields for the transient shell widget */
typedef struct { Widget transient_for;} TransientShellPart;

typedef struct {
    CorePart      core;
    CompositePart composite;
    ShellPart     shell;
    WMShellPart   wm;
    VendorShellPart vendor;
    TransientShellPart transient;
} TransientShellRec, *TransientShellWidget;

```

```

/* TopLevelShell Widget Private Data */
/* New fields for the TopLevelShell widget class record */
typedef struct { XtPointer extension;} TopLevelShellClassPart;

typedef struct _TopLevelShellClassRec {
    CoreClassPart      core_class;
    CompositeClassPart composite_class;
    ShellClassPart     shell_class;
    WMShellClassPart   wm_shell_class;
    VendorShellClassPart vendor_shell_class;
    TopLevelShellClassPart top_level_shell_class;
} TopLevelShellClassRec;

/* New fields for the top level shell widget */
typedef struct {
    char      *icon_name;
    Boolean   iconic;
    Atom      icon_name_encoding;
} TopLevelShellPart;

typedef struct {
    CorePart      core;
    CompositePart composite;
    ShellPart     shell;
    WMShellPart   wm;
    VendorShellPart vendor;
    TopLevelShellPart topLevel;
} TopLevelShellRec, *TopLevelShellWidget;

/* ApplicationShell Widget Private Data */
/* New fields for the ApplicationShell widget class record */

typedef struct { XtPointer extension;} ApplicationShellClassPart;

typedef struct _ApplicationShellClassRec {
    CoreClassPart      core_class;
    CompositeClassPart composite_class;
    ShellClassPart     shell_class;
    WMShellClassPart   wm_shell_class;
    VendorShellClassPart vendor_shell_class;
    TopLevelShellClassPart top_level_shell_class;
    ApplicationShellClassPart application_shell_class;
} ApplicationShellClassRec;

/* New fields for the application shell widget */

typedef struct {
    char *class;
    XrmClass xrm_class;
    int argc;
    char **argv;
} ApplicationShellPart;

typedef struct {
    CorePart      core;
    CompositePart composite;
    ShellPart     shell;
    WMShellPart   wm;
    VendorShellPart vendor;

```



```

        TopLevelShellPart topLevel;
        ApplicationShellPart application;
    } ApplicationShellRec, *ApplicationShellWidget;

```

Figure 10-19: Data Types from <X11/VendorPh>

```

/* New fields for the VendorShell widget class record */

typedef struct {
    XtPointer      extension; /* pointer to extension record */
} VendorShellClassPart;

typedef struct _VendorShellClassRec {
    CoreClassPart      core_class;
    CompositeClassPart composite_class;
    ShellClassPart     shell_class;
    WMShellClassPart   wm_shell_class;
    VendorShellClassPart vendor_shell_class;
} VendorShellClassRec;

/* New fields for the vendor shell widget. */
typedef struct {int vendor_specific;} VendorShellPart;

typedef struct {
    CorePart      core;
    CompositePart composite;
    ShellPart     shell;
    WMShellPart   wm;
    VendorShellPart vendor;
} VendorShellRec, *VendorShellWidget;

```

The OPEN LOOK Widget Set

Overview

This chapter identifies binary interfaces for libXol. A source description for the entry points and exported data structures so identified may be found in the *OLIT Reference Manual* (Sun Microsystems, Part No. 800-6055-10, Revision A.).

The libXol Interfaces

The names listed below in Tables 10-9 and 10-10 have been included in SCD 2.3 as the names for the OPEN LOOK Widget Set REQUIRED INTERFACES, and must to be present on all conformant systems through the reference name `/usr/lib/libXol.so.3`. Note that Table 10-10 defines the size of exported data objects as a hexadecimal byte count described in square brackets after each name. However, this interface set is also DEPRECATED effective November 1st, 1993 and may be removed from this specification as early as November 1st, 1996. No new applications should be developed to use the OPEN LOOK Widget Set.

Figures 10-27 and 10-28 detail the manifest constants associated with libXol and its visible data structures, respectively. The sizes of certain global data are deliberately hidden from programmers. These sizes are left unspecified because there is no attempt made to support subclassing of OLIT widgets.

The names listed below in Tables 10-9 and 10-10 have been included in SCD 2.3 as the names for the OPEN LOOK Widget Set REQUIRED INTERFACES, and must be present on all conformant systems through the reference name `/usr/lib/libXol.so.3`. However, this interface set is also DEPRECATED effective November 1st, 1993, and may be removed from this specification as early as November 1st, 1996. No new applications should be developed to use the OPEN LOOK Widget Set.

Table 10-10 defines the size of exported data objects as a hexadecimal byte count in square brackets after each name. Some of the sizes are given as question marks. Where the size of an item is a question mark, that symbol is a reserved symbol which must not be used by an SCD-conforming application. They are widget class records, and are only used in order to subclass widgets. The subclassing of OLIT widgets is not supported by the SCD.

Rationale:

The class records for OPEN LOOK widgets are of interest only for subclassing of these widgets. Programs that use these widgets without subclassing them need not and must not reference these symbols. Programs must also not use these symbols as external symbols for any other purpose because this will interfere with the Widget Library's use of them.

Programs that do subclass OPEN LOOK widgets do not conform to the SCD. This is because the authors of the SCD cannot guarantee upward compatibility of widgets from one release to the next. The size of each widget class record is subject to being changed by the owner(s) of the code. Widget subclass records depend on the size of the class record of the superordinate class. They will be rendered invalid at the binary interface level if the size of the superordinate class record changes.

Table 10-9. libXol Contents

AllocateBuffer	OlCategorySetPage	OlTextEditInsert
AllocateTextBuffer	OlDragAndDrop	OlTextEditPaste
BackwardScanTextBuffer	OlError	OlTextEditReadSubString
CopyBuffer	OlGet50PercentGrey	OlTextEditRedraw
CopyTextBufferBlock	OlGet75PercentGrey	OlTextEditResize
EndCurrentTextBufferWord	OlGetApplicationResources	OlTextEditSetCursorPosition
ForwardScanTextBuffer	OlGetApplicationValues	OlTextEditTextBuffer
FreeBuffer	OlGetBeepVolume	OlTextEditUpdate
FreeTextBuffer	OlGetCurrentFocusWidget	OlTextFieldCopyString
GetOlBusyCursor	OlGrabDragPointer	OlTextFieldGetString
GetOlDuplicateCursor	OlHasCallbacks	OlToolkitInitialize
GetOlMoveCursor	OlHasFocus	OlUngrabDragPointer
GetOlPanCursor	OlInitialize	OlUpdateDisplay
GetOlQuestionCursor	OlLayoutScrolledWindow	OlVaDisplayErrorMsg
GetOlSWGeometries	OlListItemPointer	OlVaDisplayWarningMsg
GetOlStandardCursor	OlMenuPopdown	OlWMPProtocolAction
GetOlTargetCursor	OlMenuPopup	OlWarning
GetTextBufferBlock	OlMenuPost	PositionOfLine
GetTextBufferBuffer	OlMenuUnpost	PositionOfLocation
GetTextBufferChar	OlMoveFocus	PreviousLocation
GetTextBufferLine	OlQueryAcceleratorDisplay	PreviousTextBufferWord
GetTextBufferLocation	OlQueryMnemonicDisplay	ReadFileIntoBuffer
GrowBuffer	OlRegisterColorTupleListConverter	ReadFileIntoTextBuffer
IncrementTextBufferLocation	OlRegisterHelp	ReadStringIntoBuffer
InsertIntoBuffer	OlRemoveCallback	ReadStringIntoTextBuffer
LastTextBufferLocation	OlSetErrorHandler	RegisterTextBufferScanFunctions
LastTextBufferPosition	OlSetGaugeValue	RegisterTextBufferUpdate
LineOfPosition	OlSetInputFocus	RegisterTextBufferWordDefinition
LocationOfPosition	OlSetVaDisplayErrorMsgHandler	ReplaceBlockInTextBuffer
LookupOlInputEvent	OlSetVaDisplayWarningMsgHandler	ReplaceCharInTextBuffer
NextLocation	OlSetWarningHandler	SaveTextBuffer
NextTextBufferWord	OlTextEditClearBuffer	StartCurrentTextBufferWord
OlAddCallback	OlTextEditCopyBuffer	UnregisterTextBufferUpdate
OlCallAcceptFocus	OlTextEditCopySelection	
OlCallCallbacks	OlTextEditGetCursorPosition	
OlCanAcceptFocus	OlTextEditGetLastPosition	

Table 10-10. Exported Data in libXol

abbrevMenuButtonClassRec[?]	gaugeClassRec[?]	popupWindowShellWidgetClass[0x4]
abbrevMenuButtonWidgetClass[0x4]	gaugeWidgetClass[0x4]	primitiveClassRec[?]
baseWindowShellClassRec[?]	helpClassRec[?]	primitiveWidgetClass[0x4]
baseWindowShellWidgetClass[0x4]	helpWidgetClass[0x4]	pushpinClassRec[?]
bulletinBoardClassRec[?]	listClassRec[?]	pushpinWidgetClass[0x4]
bulletinBoardWidgetClass[0x4]	listPaneClassRec[?]	rectButtonClassRec[?]
buttonClassRec[?]	listPaneWidgetClass[0x4]	rectButtonWidgetClass[0x4]
buttonGadgetClass[0x4]	magClassRec[?]	rubberTileClassRec[?]
buttonGadgetClassRec[?]	magWidgetClass[0x4]	rubberTileWidgetClass[0x4]
buttonWidgetClass[0x4]	managerClassRec[?]	scrollbarClassRec[?]
captionClassRec[?]	managerWidgetClass[0x4]	scrollbarWidgetClass[0x4]
captionWidgetClass[0x4]	menuButtonClassRec[?]	scrolledWindowClassRec[?]
categoryClassRec[?]	menuButtonGadgetClass[0x4]	scrolledWindowWidgetClass[0x4]
categoryWidgetClass[0x4]	menuButtonGadgetClassRec[?]	scrollingListWidgetClass[0x4]
checkBoxClassRec[?]	menuButtonWidgetClass[0x4]	sliderClassRec[?]
checkBoxWidgetClass[0x4]	menuShellClassRec[?]	sliderWidgetClass[0x4]
controlAreaWidgetClass[0x4]	menuShellWidgetClass[0x4]	staticTextWidgetClass[0x4]
controlClassRec[?]	nonexclusivesClassRec[?]	statictextClassRec[?]
eventObjClass[0x4]	nonexclusivesWidgetClass[0x4]	statictextWidgetClass[0x4]
eventObjClassRec[?]	noticeShellClassRec[?]	textEditWidgetClass[0x4]
exclusivesClassRec[?]	noticeShellWidgetClass[0x4]	textFieldClassRec[?]
exclusivesWidgetClass[0x4]	oblongButtonClassRec[?]	textFieldWidgetClass[0x4]
footerPanelClassRec[?]	oblongButtonGadgetClass[0x4]	vendorShellClassRec[?]
footerPanelWidgetClass[0x4]	oblongButtonGadgetClassRec[?]	vendorShellWidgetClass[0x4]
formClassRec[?]	oblongButtonWidgetClass[0x4]	
formWidgetClass[0x4]	popupWindowShellClassRec[?]	

Figure 10-27. libXol Manifest Constants

#define OleditDone	0	#define OL_NOTICES	47	#define OL_VSBMENU	99
#define OleditError	1	#define OL_OBLONG	49	#define OL_NEXTAPP	101
#define OleditPosError	2	#define OL_OUT	50	#define OL_NEXTWINDOW	102
#define OleditReject	3	#define OL_OVERRIDE_PAIR	51	#define OL_PREVAPP	103
#define OL_ABSENT_PAIR	0	#define OL_PIXELS	52	#define OL_PREVWINDOW	104
#define OL_ALL	1	#define OL_POINTS	53	#define OL_WINDOWMENU	105
#define OL_ALWAYS	2	#define OL_POPUP	54	#define OL_WORKSPACEMENU	106
#define OL_ATOM_HELP	3	#define OL_PREVIOUS	55	#define OL_DEFAULTACTION	108
#define OL_BOTH	4	#define OL_PROG_DEFINED_SOURCE	56	#define OL_TOGGLEPUSHPIN	111
#define OL_BOTTOM	5	#define OL_RECTBUTTON	57	#define OL_IMMEDIATE	120
#define OL_BUTTONSTACK	6	#define OL_RIGHT	58	#define OL_CLICK_TO_TYPE	125
#define OL_CENTER	7	#define OL_ROWS	59	#define OL_REALESTATE	126
#define OL_CLASS_HELP	8	#define OL_SOURCE_FORM	60	#define OL_UNDERLINE	127
#define OL_COLUMNS	9	#define OL_SOURCE_PAIR	61	#define OL_HIGHLIGHT	128
#define OL_COPY_MASK_VALUE	10	#define OL_STAYUP	62	#define OL_INACTIVE	129
#define OL_COPY_SIZE	11	#define OL_STRING	63	#define OL_DISPLAY	130
#define OL_COPY_SOURCE_VALUE	12	#define OL_STRING_SOURCE	64	#define OL_PROC	131
#define OL_CURRENT	13	#define OL_TEXT_APPEND	65	#define OL_SIZE_PROC	132
#define OL_DEFAULT_PAIR	14	#define OL_TEXT_EDIT	66	#define OL_DRAW_PROC	133
#define OL_DISK_SOURCE	15	#define OL_TEXT_READ	67	#define OL_PINNED_MENU	134
#define OL_DISPLAY_FORM	16	#define OL_TOP	68	#define OL_PRESS_DRAG_MENU	135
#define OL_DOWN	17	#define OL_TRANSPARENT_SOURCE	69	#define OL_STAYUP_MENU	136
#define OL_EXISTING_SOURCE	18	#define OL_VERTICAL	70	#define OL_POINTER	137
#define OL_FIXEDCOLS	19	#define OL_WIDGET_HELP	73	#define OL_INPUTFOCUS	138
#define OL_FIXEDHEIGHT	20	#define OL_WINDOW_HELP	74	#define OL_QUIT	142
#define OL_FIXEDROWS	21	#define OL_WRAP_ANY	75	#define OL_DESTROY	143
#define OL_FIXEDWIDTH	22	#define OL_WRAP_WHITE_SPACE	76	#define OL_DISMISS	144
#define OL_HALFSTACK	29	#define OL_CONTINUOUS	77	#define OL_PRE	145
#define OL_HORIZONTAL	30	#define OL_GRANULARITY	78	#define OL_POST	146
#define OL_IMAGE	31	#define OL_RELEASE	79		
#define OL_IN	32	#define OL_TICKMARK	80		
#define OL_INDIRECT_SOURCE	33	#define OL_PERCENT	81		
#define OL_LABEL	34	#define OL_SLIDERVALUE	82		
#define OL_LEFT	35	#define OL_WT_BASE	83		
#define OL_MASK_PAIR	36	#define OL_WT_CMD	84		
#define OL_MAXIMIZE	37	#define OL_WT_NOTICE	85		
#define OL_MILLIMETERS	38	#define OL_WT_HELP	86		
#define OL_MINIMIZE	39	#define OL_WT_OTHER	87		
#define OL_NEVER	40	#define OL_SUCCESS	88		
#define OL_NEXT	41	#define OL_BAD_KEY	90		
#define OL_NONE	42	#define OL_MENU_FULL	91		
#define OL_NONEBOTTOM	43	#define OL_MENU_LIMITED	92		
#define OL_NONELEFT	44	#define OL_MENU_CANCEL	93		
#define OL_NONERIGHT	45	#define OL_MENUDEFAULT	96		
#define OL_NONETOP	46	#define OL_HSBMENU	98		

```
typedef enum {motionVerify, modVerify, leaveVerify} OlVerifyOpType;
typedef enum {OlstdLeft, OlstdRight} OlScanDirection;
typedef enum {OlstPositions, OlstWhiteSpace, OlstEOL, OlstParagraph, OlstLast} OlScanType;
typedef enum {NOTOPEN, READWRITE, READONLY, NEWFILE } TextFileStatus;
typedef enum {EDIT_FAILURE, EDIT_SUCCESS } EditResult;
typedef enum {SCAN_NOTFOUND, SCAN_WRAPPED, SCAN_FOUND, SCAN_INVALID } ScanResult;
typedef enum {SAVE_FAILURE, SAVE_SUCCESS } SaveResult;
```

```
#define TEXT_BUFFER_NOP (0)
#define TEXT_BUFFER_DELETE_START_LINE (1L<<0)
#define TEXT_BUFFER_DELETE_START_CHARS (1L<<1)
#define TEXT_BUFFER_DELETE_END_LINE (1L<<2)
#define TEXT_BUFFER_DELETE_END_CHARS (1L<<3)
#define TEXT_BUFFER_DELETE_JOIN_LINE (1L<<4)
#define TEXT_BUFFER_DELETE_SIMPLE (1L<<5)
#define TEXT_BUFFER_INSERT_SPLIT_LINE (1L<<6)
```

```
#define TEXT_BUFFER_INSERT_LINE (1L<<7)
#define TEXT_BUFFER_INSERT_CHARS (1L<<8)
#define CHANGE_BAR_WIDTH 3
#define CHANGE_BAR_HEIGHT 18
#define CHANGE_BAR_PAD 7
#define OL_DIM 1000
#define OL_NORMAL 1001
#define OL_PROPAGATE_TO_CONTROL_AREA 0x0001
#define OL_PROPAGATE_TO_CATEGORY 0x0002
#define OL_PROPAGATE (OL_PROPAGATE_TO_CONTROL_AREA \OL_PROPAGATE_TO_CATEGORY)
```

Figure 10-28. libXol Data Structures

```
typedef struct _CaptionClassRec CaptionWidgetClass;
typedef struct _CaptionRec *CaptionWidget;
typedef struct _CategoryClassRec *CategoryWidgetClass;
typedef struct _CategoryRec *CategoryWidget;
typedef struct _CheckBoxClassRec *CheckBoxWidgetClass;
typedef struct _CheckBoxRec *CheckBoxWidget;
typedef int ControlLayout;
typedef int OlSameSize;
typedef struct _ControlClassRec *ControlAreaWidgetClass;
typedef struct _ControlRec *ControlAreaWidget;
typedef struct _EventObjClassRec *EventObjClass;
typedef struct _EventObjRec *EventObj;
typedef struct _ExclusivesClassRec *ExclusivesWidgetClass;
typedef struct _ExclusivesRec *ExclusivesWidget;
typedef struct _FooterPanelClassRec *FooterPanelWidgetClass;
typedef struct _FooterPanelRec *FooterPanelWidget;
typedef struct _FormClassRec *FormWidgetClass;
typedef struct _FormRec *FormWidget;
typedef struct _FormConstraintRec *FormConstraints;
typedef struct _SliderClassRec *GaugeWidgetClass;
typedef struct _SliderRec *GaugeWidget;
typedef struct _HelpClassRec *HelpWidgetClass;
typedef struct _HelpRec *HelpWidget;
typedef struct _ListPaneClassRec *ListPaneWidgetClass;
typedef struct _ListPaneRec *ListPaneWidget;
typedef struct _MagClassRec *MagWidgetClass;
typedef struct _MagRec *MagWidget;
typedef struct _ManagerClassRec *ManagerWidgetClass;
typedef struct _ManagerRec *ManagerWidget;
typedef struct _MenuShellClassRec *MenuShellWidgetClass;
typedef struct _MenuShellRec *MenuShellWidget;
typedef struct _MenuButtonClassRec *MenuButtonWidgetClass;
typedef struct _MenuButtonRec *MenuButtonWidget;
typedef struct _MenuButtonGadgetClassRec *MenuButtonGadgetClass;
typedef struct _MenuButtonGadgetRec *MenuButtonGadget;
typedef struct _NonexclusivesClassRec *NonexclusivesWidgetClass;
typedef struct _NonexclusivesRec *NonexclusivesWidget;
typedef struct _NoticeShellClassRec *NoticeShellWidgetClass;
typedef struct _NoticeShellRec *NoticeShellWidget;
typedef struct _OblongButtonClassRec *OblongButtonWidgetClass;
typedef struct _OblongButtonRec *OblongButtonWidget;
typedef struct _OblongButtonGadgetClassRec *OblongButtonGadgetClass;
typedef struct _OblongButtonGadgetRec *OblongButtonGadget;
typedef short OlDefine;
```

```

typedef unsigned long                OlBitMask;
typedef struct _PopupWindowShellClassRec *PopupWindowShellWidgetClass;
typedef struct _PopupWindowShellRec    *PopupWindowShellWidget;
typedef struct _PrimitiveClassRec      *PrimitiveWidgetClass;
typedef struct _PrimitiveRec           *PrimitiveWidget;
typedef struct _PushpinClassRec        *PushpinWidgetClass;
typedef struct _PushpinRec             *PushpinWidget;
typedef struct _RectButtonClassRec     *RectButtonWidgetClass;
typedef struct _RectButtonRec          *RectButtonWidget;
typedef struct _RubberTileClassRec     *RubberTileWidgetClass;
typedef struct _RubberTileRec          *RubberTileWidget;
typedef struct _ScrollbarClassRec      *ScrollbarWidgetClass;
typedef struct _ScrollbarRec           *ScrollbarWidget;

typedef struct OlScrollbarVerify {
    int            new_location;
    int            new_page;
    Boolean        ok;
    int            slidermin;
    int            slidermax;
    int            delta;
    Boolean        more_cb_pending;
} OlScrollbarVerify;

typedef struct _ScrolledWindowClassRec *ScrolledWindowWidgetClass;
typedef struct _ScrolledWindowRec      *ScrolledWindowWidget;
typedef struct _OlSWGeometries {
    Widget        sw;
    Widget        vsb;
    Widget        hsb;
    Dimension     bb_border_width;
    Dimension     vsb_width;
    Dimension     vsb_min_height;
    Dimension     hsb_height;
    Dimension     hsb_min_width;
    Dimension     sw_view_width;
    Dimension     sw_view_height;
    Dimension     bbc_width;
    Dimension     bbc_height;
    Dimension     bbc_real_width;
    Dimension     bbc_real_height;
    Boolean       force_hsb;
    Boolean       force_vsb;
} OlSWGeometries;

typedef struct _OlListItem {
    OlDefine      label_type;
    XtPointer     label;
    XImage        *glyph;
    OlBitMask     attr;
    XtPointer     user_data;
    unsigned char implementation_specific;
} OlListItem;

typedef struct _OlListToken *OlListToken;
typedef struct _OlListDelete {
    OlListToken    *tokens;
    Cardinal       num_tokens;
} OlListDelete;

```

```

typedef struct _ListClassRec *ScrollingListWidgetClass;
typedef struct _ListRec      *ScrollingListWidget;
typedef struct _SliderClassRec *SliderWidgetClass;
typedef struct _SliderRec     *SliderWidget;
typedef struct OlSliderVerify {
    int      new_location;
    Boolean  more_cb_pending;
} OlSliderVerify;

typedef struct _StaticTextClassRec *StaticTextWidgetClass;
typedef struct _StaticTextRec      *StaticTextWidget;
typedef Dimension                  *TabTable;
typedef struct {
    OlTextMarginHint      hint;
    XRectangle            *rect;
} OlTextMarginCallData, *OlTextMarginCallDataPointer;

typedef struct {
    Boolean      ok;
    TextPosition current_cursor;
    TextPosition new_cursor;
    TextPosition select_start;
    TextPosition select_end;
} OlTextMotionCallData, *OlTextMotionCallDataPointer;

typedef struct {
    Boolean ok;
    TextPosition      current_cursor;
    TextPosition      select_start;
    TextPosition      select_end;
    TextPosition      new_cursor;
    TextPosition      new_select_start;
    TextPosition      new_select_end;
    String             text;
    int                text_length;
} OlTextModifyCallData, *OlTextModifyCallDataPointer;

typedef struct {
    Boolean      requestor;
    TextPosition new_cursor;
    TextPosition new_select_start;
    TextPosition new_select_end;
    String        inserted;
    String        deleted;
    TextLocation  delete_start;
    TextLocation  delete_end;
    TextLocation  insert_start;
    TextLocation  insert_end;
    TextPosition  cursor_position;
} OlTextPostModifyCallData, *OlTextPostModifyCallDataPointer;

typedef struct _TextEditClassRec *TextEditWidgetClass;
typedef struct _TextEditRec      *TextEditWidget;
typedef struct _TextFieldClassRec *TextFieldWidgetClass;
typedef struct _TextFieldRec      *TextFieldWidget;

```



```

typedef struct {
    String                string;
    Boolean               ok;
    OlTextVerifyReason    reason;
} OlTextFieldVerify, *OlTextFieldVerifyPointer;

typedef char BufferElement;
typedef struct _Buffer {
    int                size;
    int                used;
    int                esize;
    BufferElement       *p;
} Buffer;

typedef int  TextPosition;
typedef int  TextLine;
typedef int  TextPage;
typedef int  TextBlock;
typedef struct{
    int                size;
    int                used;
    int                esize;
    TextBlock          *p;
} BlockTable;

typedef struct {
    TextPage            pageindex;
    unsigned long       timestamp;
} PageQueue;

typedef struct {
    TextPosition        bytes;
    TextLine            lines;
    TextPage            qpos;
    BlockTable          *dpos;
} Page;

typedef struct {
    TextPage            pageindex;
    Buffer               *buffer;
    unsigned long       userData;
} Line;

typedef struct {
    int                size;
    int                used;
    int                esize;
    Page               *p;
} PageTable;
typedef struct {
    int                size;
    int                used;
    int                esize;
    Line               *p;
} LineTable;

```

```

typedef struct _TextLocation {
    TextLine          line;
    TextPosition      offset;
    BufferElement      *buffer;
} TextLocation;

typedef int TextUndoHint;
typedef struct _TextUndoItem {
    String            string;
    TextLocation      start;
    TextLocation      end;
    TextUndoHint      hint;
} TextUndoItem;

typedef void (*TextUpdateFunction)();
typedef struct _TextUpdateCallback {
    TextUpdateFunction f;
    caddr_t            d;
} TextUpdateCallback;

typedef struct _TextBuffer {
    char                *filename;
    FILE                *tempfile;
    TextBlock           blockcnt;
    TextBlock           blocksize;
    LineTable           lines;
    PageTable           pages;
    BlockTable          *free_list;
    PageQueue           pqueue[PQLIMIT];
    TextPage            pagecount;
    TextPage            pageref;
    TextPage            curpageno;
    Buffer               *buffer;
    char                dirty;
    TextFileStatus      status;
    int                 refcount;
    TextUpdateCallback  *update;
    TextUndoItem        deleted;
    TextUndoItem        insert;
} TextBuffer;

```

Motif 1.2 Widget Set

Overview

This chapter contains the interfaces to the Motif 1.2 user interface environment. The Motif 1.2 interfaces are represented through the libXm and libMrm libraries.

The Motif 1.2 Interface is comprised of a set of Graphical User Interface components that together makeup a unique user interface environment. The components of this environment are: the toolkit, window manager, and user interface language. These user interface components are defined in the *OSF/Motif Programmer's Reference, Revision 1.2* (Open Software Foundation, Inc. 1992 - Prentice-Hall, ISBN 0-13-643115-1)

The Motif Interfaces

The interfaces listed below in Table 10-11, Table 10-12 and Table 10-13 have been included in SCD 2.3 because they are required to be present on all systems conforming to the SCD 2.3 REQUIRED interface definition for Motif 1.2, in the dynamic libraries `/usr/lib/libXm.so.1.2` and `/usr/lib/libMrm.so.1.2`.

Figure 10-29 through Figure 10-74 detail the manifest constants associated with libXm and libMrm and it's visible data structures, respectively.

In addition to the interfaces listed in the tables all SCD 2.3 compliant systems that offer Motif must have the `uil(3)` command and the `mwm(3)` window manager as defined in the *OSF/Motif Programmer's Reference, Release 1.2* (Prentice-Hall, ISBN 0-13-643115-1).

Table 10-12 defines the size of exported data objects as a hexadecimal byte count in square brackets after each name. Some of the sizes are given as question marks. Where the size of an item is a question mark, that symbol is a reserved symbol which must not be used by an SCD-conforming application. They are widget class records, and are only used in order to subclass widgets. The subclassing of Motif widgets is not supported by the SCD.

Rationale:

The class records for Motif widgets are of interest only for subclassing of these widgets. Programs that use these widgets without subclassing them need not and must not reference these symbols. Programs must also not use these symbols as external symbols for any other purpose because this will interfere with the Widget Library's use of them.

Programs that do subclass Motif widgets do not conform to the SCD. This is because the authors of the SCD cannot guarantee upward compatibility of widgets from one release to the next. The size of each widget class record is subject to being changed by the owner(s) of the code. Widget subclass records depend on the size of the class record of the superordinate class. They will be rendered invalid at the binary interface level if the size of the superordinate class record changes.

Table 10-11: Contents of libXm (1 of 2)

XmActivateProtocol	XmCreateScrollBar	XmGetSecondaryResourceData
XmAddProtocolCallback	XmCreateScrolledList	XmGetTabGroup
XmAddProtocols	XmCreateScrolledText	XmGetTearOffControl
XmAddTabGroup	XmCreateScrolledWindow	XmGetVisibility
XmCascadeButtonGadgetHighlight	XmCreateSelectionBox	XmGetXmDisplay
XmCascadeButtonHighlight	XmCreateSelectionDialog	XmGetXmScreen
XmChangeColor	XmCreateSeparator	XmInstallImage
XmClipboardCancelCopy	XmCreateSeparatorGadget	XmInternAtom
XmClipboardCopy	XmCreateSimpleCheckBox	XmIsMotifWMRunning
XmClipboardCopyByName	XmCreateSimpleMenuBar	XmIsTraversable
XmClipboardEndCopy	XmCreateSimpleOptionMenu	XmListAddItem
XmClipboardEndRetrieve	XmCreateSimplePopupMenu	XmListAddItems
XmClipboardInquireCount	XmCreateSimplePullDownMenu	XmListAddItemsUnselected
XmClipboardInquireFormat	XmCreateSimpleRadioBox	XmListAddItemUnselected
XmClipboardInquireLength	XmCreateTemplateDialog	XmListDeleteAllItems
XmClipboardInquirePendingItems	XmCreateText	XmListDeleteItem
XmClipboardLock	XmCreateTextField	XmListDeleteItems
XmClipboardRegisterFormat	XmCreateToggleButton	XmListDeleteItemsPos
XmClipboardRetrieve	XmCreateToggleToggleButtonGadget	XmListDeletePos
XmClipboardStartCopy	XmCreateWarningDialog	XmListDeletePositions
XmClipboardStartRetrieve	XmCreateWorkArea	XmListDeselectAllItems
XmClipboardUndoCopy	XmCreateWorkingDialog	XmListDeselectItem
XmClipboardUnlock	XmCvtCTToXmString	XmListDeselectPos
XmClipboardWithdrawFormat	XmCvtStringToUnitType	XmListGetKbdItemPos
XmCommandAppendValue	XmCvtXmStringToCT	XmListGetMatchPos
XmCommandError	XmDeactivateProtocol	XmListGetSelectedPos
XmCommandGetChild	XmDestroyPixmap	XmListItemExists
XmCommandSetValue	XmDragCancel	XmListItemPos
XmConvertUnits	XmDragStart	XmListPosSelected
XmCreateArrowButton	XmDropSiteConfigureStackingOrder	XmListPosToBounds
XmCreateArrowButtonGadget	XmDropSiteEndUpdate	XmListReplaceItems
XmCreateBulletinBoard	XmDropSiteQueryStackingOrder	XmListReplaceItemsPos
XmCreateBulletinBoardDialog	XmDropSiteRegister	XmListReplaceItemsPosUnselected
XmCreateCascadeButton	XmDropSiteRetrieve	XmListReplaceItemsUnselected
XmCreateCascadeButtonGadget	XmDropSiteStartUpdate	XmListReplacePositions
XmCreateCommand	XmDropSiteUnregister	XmListSelectItem
XmCreateDialogShell	XmDropSiteUpdate	XmListSelectPos
XmCreateDragIcon	XmDropTransferAdd	XmListSetAddMode
XmCreateDrawingArea	XmDropTransferStart	XmListSetBottomItem
XmCreateDrawnButton	XmFileSelectionBoxGetChild	XmListSetBottomPos
XmCreateErrorDialog	XmFileSelectionDoSearch	XmListSetHorizPos
XmCreateFileSelectionBox	XmFontListAdd	XmListSetItem
XmCreateFileSelectionDialog	XmFontListAppendEntry	XmListSetKbdItemPos
XmCreateForm	XmFontListCopy	XmListSetPos
XmCreateFormDialog	XmFontListCreate	XmListUpdateSelectedList
XmCreateFrame	XmFontListEntryCreate	
XmCreateInformationDialog	XmFontListEntryFree	
XmCreateLabel	XmFontListEntryGetFont	
XmCreateLabelGadget	XmFontListEntryGetTag	
XmCreateList	XmFontListEntryLoad	
XmCreateMainWindow	XmFontListFree	
XmCreateMenuBar	XmFontListFreeFontContext	
XmCreateMenuShell	XmFontListGetNextFont	
XmCreateMessageBox	XmFontListInitFontContext	
XmCreateMessageDialog	XmFontListNextEntry	
XmCreateOptionMenu	XmFontListRemoveEntry	
XmCreatePanedWindow	XmGetAtomName	
XmCreatePopupMenu	XmGetColorCalculation	
XmCreatePromptDialog	XmGetColors	
XmCreatePullDownMenu	XmGetDestination	
XmCreatePushButton	XmGetDragContext	
XmCreatePushButtonGadget	XmGetFocusWidget	
XmCreateQuestionDialog	XmGetMenuCursor	
XmCreateRadioBox	XmGetPixmap	
XmCreateRowColumn	XmGetPixmapByDepth	
XmCreateScale	XmGetPostedFromWidget	

Table 10-11: Contents of libXm (2 of 2)

XmListYToPos	XmStringInitContext	XmTextGetStringWcs
XmMainWindowSep1	XmStringLength	XmTextGetSubstring
XmMainWindowSep2	XmStringLineCount	XmTextGetSubstringWcs
XmMainWindowSep3	XmStringNConcat	XmTextGetTopCharacter
XmMainWindowSetAreas	XmStringNCopy	XmTextInsert
XmMapSegmentEncoding	XmStringPeekNextComponent	XmTextInsertWcs
XmMenuPosition	XmStringSegmentCreate	XmTextPaste
XmMessageBoxGetChild	XmStringSeparatorCreate	XmTextPosToXY
XmOptionButtonGadget	XmStringWidth	XmTextRemove
XmOptionLabelGadget	XmTargetsAreCompatible	XmTextReplace
XmProcessTraversal	XmTextClearSelection	XmTextReplaceWcs
XmRegisterSegmentEncoding	XmTextCopy	XmTextScroll
XmRemoveProtocolCallback	XmTextCut	XmTextSetAddMode
XmRemoveProtocols	XmTextDisableRedisplay	XmTextSetEditable
XmRemoveTabGroup	XmTextEnableRedisplay	XmTextSetHighlight
XmRepTypeAddReverse	XmTextFieldClearSelection	XmTextSetInsertionPosition
XmRepTypeGetId	XmTextFieldCopy	XmTextSetMaxLength
XmRepTypeGetNameList	XmTextFieldCut	XmTextSetSelection
XmRepTypeGetRecord	XmTextFieldGetBaseline	XmTextSetSource
XmRepTypeGetRegistered	XmTextFieldGetEditable	XmTextSetString
XmRepTypeInstallTearOffModel- Converter	XmTextFieldGetInsertionPosition	XmTextSetStringWcs
XmRepTypeRegister	XmTextFieldGetLastPosition	XmTextSetTopCharacter
XmRepTypeValidValue	XmTextFieldGetMaxLength	XmTextShowPosition
XmResolveAllPartOffsets	XmTextFieldGetSelection	XmTextXYToPos
XmResolvePartOffsets	XmTextFieldGetSelectionPosition	XmToggleButtonGadgetGetState
XmScaleGetValue	XmTextFieldGetSelectionWcs	XmToggleButtonGadgetSetState
XmScaleSetValue	XmTextFieldGetString	XmToggleButtonGetState
XmScrollBarGetValues	XmTextFieldGetStringWcs	XmToggleButtonSetState
XmScrollBarSetValues	XmTextFieldGetSubstring	XmTrackingEvent
XmScrolledWindowSetAreas	XmTextFieldGetSubstringWcs	XmTrackingLocate
XmScrollVisible	XmTextFieldInsert	XmTranslateKey
XmSelectionBoxGetChild	XmTextFieldInsertWcs	XmUninstallImage
XmSetColorCalculation	XmTextFieldPaste	XmUpdateDisplay
XmSetFontUnit	XmTextFieldPosToXY	XmVaCreateSimpleCheckBox
XmSetFontUnits	XmTextFieldRemove	XmVaCreateSimpleMenuBar
XmSetMenuCursor	XmTextFieldReplace	XmVaCreateSimpleOptionMenu
XmSetProtocolHooks	XmTextFieldReplaceWcs	XmVaCreateSimplePopupMenu
XmStringBaseline	XmTextFieldSetAddMode	XmVaCreateSimplePulldownMenu
XmStringByteCompare	XmTextFieldSetEditable	XmVaCreateSimpleRadioBox
XmStringCompare	XmTextFieldSetHighlight	XmWidgetGetBaselines
XmStringConcat	XmTextFieldSetInsertionPosition	XmWidgetGetDisplayRect
XmStringCopy	XmTextFieldSetMaxLength	
XmStringCreate	XmTextFieldSetSelection	
XmStringCreateLocalized	XmTextFieldSetString	
XmStringCreateLtoR	XmTextFieldSetStringWcs	
XmStringCreateSimple	XmTextFieldShowPosition	
XmStringDirectionCreate	XmTextFieldXYToPos	
XmStringDraw	XmTextFindString	
XmStringDrawImage	XmTextFindStringWcs	
XmStringDrawUnderline	XmTextGetBaseLine	
XmStringEmpty	XmTextGetBaseline	
XmStringExtent	XmTextGetEditable	
XmStringFree	XmTextGetInsertionPosition	
XmStringFreeContext	XmTextGetLastPosition	
XmStringGetLtoR	XmTextGetMaxLength	
XmStringGetNextComponent	XmTextGetSelection	
XmStringGetNextSegment	XmTextGetSelectionPosition	
XmStringHasSubstring	XmTextGetSelectionWcs	
XmStringHeight	XmTextGetSource	
	XmTextGetString	

Table 10-12: Exported Data for Motif 1.2

vendorShellClassRec[?]	xmMainWindowWidgetClass[0x4]
vendorShellWidgetClass[0x4]	xmManagerClassRec[?]
xmArrowButtonClassRec[?]	xmManagerWidgetClass[0x4]
xmArrowButtonGadgetClass[0x4]	xmMenuShellClassRec[?]
xmArrowButtonGadgetClassRec[?]	xmMenuShellWidgetClass[0x4]
xmArrowButtonWidgetClass[0x4]	xmMessageBoxClassRec[?]
xmBulletinBoardClassRec[?]	xmMessageBoxWidgetClass[0x4]
xmBulletinBoardWidgetClass[0x4]	xmPanedWindowClassRec[?]
xmCascadeButtonClassRec[?]	xmPanedWindowWidgetClass[0x4]
xmCascadeButtonGadgetClass[0x4]	xmPrimitiveClassRec[?]
xmCascadeButtonGadgetClassRec[?]	xmPrimitiveWidgetClass[0x4]
xmCascadeButtonGCacheObjClassRec[?]	xmProtocolClassRec[?]
xmCascadeButtonWidgetClass[0x4]	xmProtocolObjectClass[0x4]
xmCommandClassRec[?]	xmPushButtonClassRec[?]
xmCommandWidgetClass[0x4]	xmPushButtonGadgetClass[0x4]
xmDesktopClass[0x4]	xmPushButtonGadgetClassRec[?]
xmDesktopClassRec[?]	xmPushButtonGCacheObjClassRec[?]
xmDesktopObjectClass[0x4]	xmPushButtonWidgetClass[0x4]
xmDialogShellClassRec[?]	XmQmotif[0x4]
xmDialogShellExtClassRec[?]	xmRowColumnClassRec[?]
xmDialogShellExtObjectClass[0x4]	xmRowColumnWidgetClass[0x4]
xmDialogShellWidgetClass[0x4]	xmSashClassRec[?]
xmDisplayClass[0x4]	xmSashWidgetClass[0x4]
xmDisplayClassRec[?]	xmScaleClassRec[?]
xmDisplayObjectClass[0x4]	xmScaleWidgetClass[0x4]
xmDragContextClass[0x4]	xmScreenClass[0x4]
xmDragContextClassRec[?]	xmScreenClassRec[?]
xmDragIconClassRec[?]	xmScreenObjectClass[0x4]
xmDragIconObjectClass[0x4]	xmScrollBarClassRec[?]
xmDragOverShellClassRec[?]	xmScrollBarWidgetClass[0x4]
xmDragOverShellWidgetClass[0x4]	xmScrolledWindowClassRec[?]
xmDrawingAreaClassRec[?]	xmScrolledWindowWidgetClass[0x4]
xmDrawingAreaWidgetClass[0x4]	xmSelectionBoxClassRec[?]
xmDrawnButtonClassRec[?]	xmSelectionBoxWidgetClass[0x4]
xmDrawnButtonWidgetClass[0x4]	xmSeparatorClassRec[?]
xmDropSiteManagerClassRec[?]	xmSeparatorGadgetClass[0x4]
xmDropSiteManagerObjectClass[0x4]	xmSeparatorGadgetClassRec[?]
xmDropTransferClassRec[?]	xmSeparatorGCacheObjClassRec[?]
xmDropTransferObjectClass[0x4]	xmSeparatorWidgetClass[0x4]
xmExtClassRec[?]	xmShellExtClassRec[?]
xmExtObjectClass[0x4]	xmShellExtObjectClass[0x4]
xmFileSelectionBoxClassRec[?]	xmTearOffButtonClassRec[?]
xmFileSelectionBoxWidgetClass[0x4]	xmTearOffButtonWidgetClass[0x4]
xmFormClassRec[?]	xmTextClassRec[?]
xmFormWidgetClass[0x4]	xmTextFieldClassRec[?]
xmFrameClassRec[?]	xmTextFieldWidgetClass[0x4]
xmFrameWidgetClass[0x4]	xmTextWidgetClass[0x4]
xmGadgetClass[0x4]	xmToggleButtonClassRec[?]
xmGadgetClassRec[?]	xmToggleButtonGadgetClass[0x4]
xmLabelClassRec[?]	xmToggleButtonGadgetClassRec[?]
xmLabelGadgetClass[0x4]	xmToggleButtonGCacheObjClassRec[?]
xmLabelGadgetClassRec[?]	xmToggleButtonWidgetClass[0x4]
xmLabelGCacheObjClassRec[?]	xmVendorShellExtClassRec[?]
xmLabelWidgetClass[0x4]	xmVendorShellExtObjectClass[0x4]
xmListClassRec[?]	xmWorldClass[0x4]
xmListWidgetClass[0x4]	xmWorldClassRec[?]
xmMainWindowClassRec[?]	xmWorldObjectClass[0x4]

Table 10-13: libMrm Contents

```
MrmCloseHierarchy
MrmFetchBitmapLiteral
MrmFetchColorLiteral
MrmFetchIconLiteral
MrmFetchLiteral
MrmFetchSetValues
MrmFetchWidget
MrmFetchWidgetOverride
MrmInitialize
MrmOpenHierarchy
MrmOpenHierarchyPerDisplay
MrmRegisterClass
MrmRegisterNames
MrmRegisterNamesInHierarchy
```

Figure 10-29. Motif 1.2 Data Structures from ArrowB.h

```
typedef struct _XmArrowButtonClassRec * XmArrowButtonWidgetClass;
typedef struct _XmArrowButtonRec      * XmArrowButtonWidget;
```

Figure 10-30. Motif 1.2 Data Structures from ArrowBG.h

```
typedef struct _XmArrowButtonGadgetClassRec * XmArrowButtonGadgetClass;
typedef struct _XmArrowButtonGadgetRec      * XmArrowButtonGadget;
```

Figure 10-31. Motif 1.2 Data Structures from BulletinB.h

```
typedef struct _XmBulletinBoardClassRec * XmBulletinBoardWidgetClass;
typedef struct _XmBulletinBoardRec      * XmBulletinBoardWidget;
```

Figure 10-32. Motif 1.2 Data Structures from CascadeB.h

```
typedef struct _XmCascadeButtonRec      * XmCascadeButtonWidget;
typedef struct _XmCascadeButtonClassRec * XmCascadeButtonWidgetClass;
```

Figure 10-33. Motif 1.2 Data Structures from CascadeBG.h

```
typedef struct _XmCascadeButtonGadgetClassRec * XmCascadeButtonGadgetClass;
typedef struct _XmCascadeButtonGadgetRec      * XmCascadeButtonGadget;
typedef struct _XmCascadeButtonGCacheObjRec    * XmCascadeButtonGCacheObject;
```

Figure 10-34. Motif 1.2 Data Structures from Command.h

```
/* Class record constants */

typedef struct _XmCommandClassRec * XmCommandWidgetClass;
typedef struct _XmCommandRec      * XmCommandWidget;
```

Figure 10-35. Motif 1.2 Manifest Constants and Data Structures from CutPaste.h

```
/* XmClipboard return status definitions */

#define XmClipboardFail      0
```

```
#define XmClipboardSuccess      1
#define XmClipboardTruncate    2
#define XmClipboardLocked      4
#define XmClipboardBadFormat   5
#define XmClipboardNoData      6

/* XmClipboard pre-1.2 definitions */

#define ClipboardFail          0
#define ClipboardSuccess       1
#define ClipboardTruncate      2
#define ClipboardLocked        4
#define ClipboardBadFormat     5
#define ClipboardNoData        6

typedef struct {
    long DataId;
    long PrivateId;
} XmClipboardPendingRec, *XmClipboardPendingList;
```

Figure 10-36. Motif 1.2 Data Structures from DialogS.h

```
typedef struct _XmDialogShellClassRec      * XmDialogShellWidgetClass;
typedef struct _XmDialogShellRec           * XmDialogShellWidget;
```

Figure 10-37. Motif 1.2 Manifest Constants and Data Structures from Display.h

```
enum {
    XmDRAG_NONE,
    XmDRAG_DROP_ONLY,
    XmDRAG_PREFER_PREREGISTER,
    XmDRAG_PREREGISTER,
    XmDRAG_PREFER_DYNAMIC,
    XmDRAG_DYNAMIC,
    XmDRAG_PREFER_RECEIVER
};

/* Class record constants */

typedef struct _XmDisplayRec *XmDisplay;
typedef struct _XmDisplayClassRec *XmDisplayClass;
```

Figure 10-38. Motif 1.2 Manifest Constants and Data Structures from DragC.h

```
#define XmDROP_MOVE      (1L << 0)
#define XmDROP_COPY      (1L << 1)
#define XmDROP_LINK      (1L << 2)

#define XmHELP            2
typedef unsigned int      XmID;

/*****
 *
 * DragContext
 *
 *****/

#define _XA_MOTIF_DROP " _MOTIF_DROP "
```



```

#define _XA_DRAG_FAILURE " _MOTIF_DRAG_FAILURE"
#define _XA_DRAG_SUCCESS " _MOTIF_DRAG_SUCCESS"

/* enums used for the message_type in client messages */

enum{    XmTOP_LEVEL_ENTER,                XmTOP_LEVEL_LEAVE,
        XmDRAG_MOTION,                    XmDROP_SITE_ENTER,
        XmDROP_SITE_LEAVE,                XmDROP_START,
        XmDROP_FINISH,                    XmDRAG_DROP_FINISH,
        XmOPERATION_CHANGED
    } ;

/* enums for completionStatus */
enum{    XmdROP,                            XmdROP_HELP,
        XmdROP_CANCEL,                    XmdROP_INTERRUPT
    } ;

/* values for operation */
#define XmdROP_NOOP    0L

enum{    XmBLEND_ALL,                      XmBLEND_STATE_SOURCE,
        XmBLEND_JUST_SOURCE,                XmBLEND_NONE
    } ;

enum{    XmdROP_FAILURE,                    XmdROP_SUCCESS
    } ;

/* enums used for the public callback reason */

enum{    XmCR_TOP_LEVEL_ENTER,                XmCR_TOP_LEVEL_LEAVE,
        XmCR_DRAG_MOTION,                    XmCR_DROP_SITE_ENTER,
        XmCR_DROP_SITE_LEAVE,                XmCR_DROP_START,
        XmCR_DROP_FINISH,                    XmCR_DRAG_DROP_FINISH,
        XmCR_OPERATION_CHANGED,
        _XmNUMBER_DND_CB_REASONS
    } ;

/* Class record constants */
typedef struct _XmDragContextClassRec    *XmDragContextClass;
typedef struct _XmDragContextRec        *XmDragContext;

typedef struct _XmAnyICCCallbackStruct{
    int            reason;
    XEvent         *event;
    Time           timeStamp;
}XmAnyICCCallbackStruct, *XmAnyICCCallback;

typedef struct _XmTopLevelEnterCallbackStruct{
    int            reason;
    XEvent         *event;
    Time           timeStamp;
    Screen         *screen;
    /*
     * the window field is different if this is an outbound or inbound
     * callback. Outbound == reciever, Inbound == initiator.
     */
    Window         window;
    Position       x, y;
    unsigned char  dragProtocolStyle;
    Atom           iccHandle;
}XmTopLevelEnterCallbackStruct, *XmTopLevelEnterCallback;

```

```
typedef struct _XmTopLevelLeaveCallbackStruct{
    int            reason;
    XEvent         *event;
    Time           timeStamp;
    Screen         *screen;
    Window         window;
}XmTopLevelLeaveCallbackStruct, *XmTopLevelLeaveCallback;

typedef struct _XmDropSiteEnterCallbackStruct{
    int            reason;
    XEvent         *event;
    Time           timeStamp;
    unsigned char  operation;
    unsigned char  operations;
    unsigned char  dropSiteStatus;
    Position       x, y;
}XmDropSiteEnterCallbackStruct, *XmDropSiteEnterCallback;

typedef struct _XmDropSiteLeaveCallbackStruct{
    int            reason;
    XEvent         *event;
    Time           timeStamp;
}XmDropSiteLeaveCallbackStruct, *XmDropSiteLeaveCallback;

typedef struct _XmDragMotionCallbackStruct{
    int            reason;
    XEvent         *event;
    Time           timeStamp;
    unsigned char  operation;
    unsigned char  operations;
    unsigned char  dropSiteStatus;
    Position       x, y;
}XmDragMotionCallbackStruct, *XmDragMotionCallback;

typedef struct _XmOperationChangedCallbackStruct{
    int            reason;
    XEvent         *event;
    Time           timeStamp;
    unsigned char  operation;
    unsigned char  operations;
    unsigned char  dropSiteStatus;
}XmOperationChangedCallbackStruct, *XmOperationChangedCallback;

typedef struct _XmDropStartCallbackStruct{
    int            reason;
    XEvent         *event;
    Time           timeStamp;
    unsigned char  operation;
    unsigned char  operations;
    unsigned char  dropSiteStatus;
    unsigned char  dropAction;
    Position       x, y;
    Window         window;
    Atom           iccHandle;
}XmDropStartCallbackStruct, *XmDropStartCallback;

typedef struct _XmDropFinishCallbackStruct{
    int            reason;
    XEvent         *event;
    Time           timeStamp;
    unsigned char  operation;
    unsigned char  operations;
    unsigned char  dropSiteStatus;
    unsigned char  dropAction;
}
```

```
    unsigned char      completionStatus;
}XmDropFinishCallbackStruct, *XmDropFinishCallback;

typedef struct _XmDragDropFinishCallbackStruct{
    int                reason;
    XEvent              *event;
    Time                timeStamp;
}XmDragDropFinishCallbackStruct, *XmDragDropFinishCallback;
```

Figure 10-39. Motif 1.2 Manifest Constants and Data Structures from DragIcon.h

```
enum {
    XmATTACH_NORTH_WEST,
    XmATTACH_NORTH,
    XmATTACH_NORTH_EAST,
    XmATTACH_EAST,
    XmATTACH_SOUTH_EAST,
    XmATTACH_SOUTH,
    XmATTACH_SOUTH_WEST,
    XmATTACH_WEST,
    XmATTACH_CENTER,
    XmATTACH_HOT
};

typedef struct _XmDragIconRec *XmDragIconObject;
typedef struct _XmDragIconClassRec *XmDragIconObjectClass;
```

Figure 10-40. Motif 1.2 Data Structures from DragOverS.h

```
typedef struct _XmDragOverShellRec      *XmDragOverShellWidget;
typedef struct _XmDragOverShellClassRec *XmDragOverShellWidgetClass;
```

Figure 10-41. Motif 1.2 Data Structures from DrawingA.h

```
typedef struct _XmDrawingAreaClassRec * XmDrawingAreaWidgetClass;
typedef struct _XmDrawingAreaRec      * XmDrawingAreaWidget;
```

Figure 10-42. Motif 1.2 Data Structures from DrawnB.h

```
typedef struct _XmDrawnButtonClassRec *XmDrawnButtonWidgetClass;
typedef struct _XmDrawnButtonRec      *XmDrawnButtonWidget;
```

Figure 10-43. Motif 1.2 Manifest Constants and Data Structures from DropSMgr.h

```
#define XmCR_DROP_SITE_LEAVE_MESSAGE 1
#define XmCR_DROP_SITE_ENTER_MESSAGE 2
#define XmCR_DROP_SITE_MOTION_MESSAGE 3
#define XmCR_DROP_MESSAGE            4

#define XmNO_DROP_SITE                1
#define XmINVALID_DROP_SITE           2
#define XmVALID_DROP_SITE             3

enum { XmDRAG_UNDER_NONE, XmDRAG_UNDER_PIXMAP,
        XmDRAG_UNDER_SHADOW_IN, XmDRAG_UNDER_SHADOW_OUT,
        XmDRAG_UNDER_HIGHLIGHT };

enum { XmDROP_SITE_SIMPLE, XmDROP_SITE_COMPOSITE,
        XmDROP_SITE_SIMPLE_CLIP_ONLY = 128,
```

```

XmDROP_SITE_COMPOSITE_CLIP_ONLY };

enum { XmABOVE, XmBELOW };

enum { XmDROP_SITE_ACTIVE, XmDROP_SITE_INACTIVE };

typedef struct _XmDragProcCallbackStruct {
    int                reason;
    XEvent *           event;
    Time               timeStamp;
    Widget             dragContext;
    Position            x, y;
    unsigned char       dropSiteStatus;
    unsigned char       operation;
    unsigned char       operations;
    Boolean             animate;
} XmDragProcCallbackStruct, * XmDragProcCallback;

typedef struct _XmDropProcCallbackStruct {
    int                reason;
    XEvent *           event;
    Time               timeStamp;
    Widget             dragContext;
    Position            x, y;
    unsigned char       dropSiteStatus;
    unsigned char       operation;
    unsigned char       operations;
    unsigned char       dropAction;
} XmDropProcCallbackStruct, * XmDropProcCallback;

typedef struct _XmDropSiteVisualsRec {
    Pixel  background;
    Pixel  foreground;
    Pixel  topShadowColor;
    Pixmap topShadowPixmap;
    Pixel  bottomShadowColor;
    Pixmap bottomShadowPixmap;
    Dimension shadowThickness;
    Pixel  highlightColor;
    Pixmap highlightPixmap;
    Dimension highlightThickness;
    Dimension borderWidth;
} XmDropSiteVisualsRec, * XmDropSiteVisuals;

/* DropSite Widget */

typedef struct _XmDropSiteManagerClassRec *XmDropSiteManagerObjectClass;
typedef struct _XmDropSiteManagerRec *XmDropSiteManagerObject;

```

Figure 10-44. Motif 1.2 Manifest Constants and Data Structures from DropTrans.h

```

#define XmTRANSFER_FAILURE 0
#define XmTRANSFER_SUCCESS 1

typedef struct _XmDropTransferClassRec * XmDropTransferObjectClass;
typedef struct _XmDropTransferRec      * XmDropTransferObject;

typedef struct _XmDropTransferEntryRec {
    XtPointer    client_data;
    Atom         target;
}

```

```
} XmDropTransferEntryRec, * XmDropTransferEntry;
```

Figure 10-45. Motif 1.2 Data Structures from FileSB.h

```
typedef struct _XmFileSelectionBoxClassRec * XmFileSelectionBoxWidgetClass;  
typedef struct _XmFileSelectionBoxRec      * XmFileSelectionBoxWidget;
```

Figure 10-46. Motif 1.2 Data Structures from Form.h

```
typedef struct _XmFormClassRec * XmFormWidgetClass;  
typedef struct _XmFormRec      * XmFormWidget;
```

Figure 10-47. Motif 1.2 Data Structures from Frame.h

```
typedef struct _XmFrameClassRec * XmFrameWidgetClass;  
typedef struct _XmFrameRec      * XmFrameWidget;
```

Figure 10-48. Motif 1.2 Data Structures from Label.h

```
typedef struct _XmLabelClassRec      * XmLabelWidgetClass;  
typedef struct _XmLabelRec           * XmLabelWidget;
```

Figure 10-49. Motif 1.2 Data Structures from LabelG.h

```
typedef struct _XmLabelGadgetClassRec * XmLabelGadgetClass;  
typedef struct _XmLabelGadgetRec      * XmLabelGadget;  
typedef struct _XmLabelGCacheObjRec   * XmLabelGCacheObject;
```

Figure 10-50. Motif 1.2 Manifest Constants and Data Structures from List.h

```
#define XmINITIAL      0  
#define XmADDITION     1  
#define XmMODIFICATION 2  
  
typedef struct _XmListClassRec * XmListWidgetClass;  
typedef struct _XmListRec      * XmListWidget;
```

Figure 10-51. Motif 1.2 Data Structures from MainW.h

```
typedef struct _XmMainWindowClassRec * XmMainWindowWidgetClass;  
typedef struct _XmMainWindowRec      * XmMainWindowWidget;
```

Figure 10-52. Motif 1.2 Data Structures from MenuShell.h

```
typedef struct _XmMenuShellClassRec * XmMenuShellWidgetClass;  
typedef struct _XmMenuShellWidgetRec * XmMenuShellWidget;
```

Figure 10-53. Motif 1.2 Data Structures from MessageB.h

```
typedef struct _XmMessageBoxClassRec * XmMessageBoxWidgetClass;  
typedef struct _XmMessageBoxRec      * XmMessageBoxWidget;
```

Figure 10-54. Motif 1.2 Manifest Constants and Data Structures from MrmPublic.h

```

/* Success or other non-error return codes */
#define MrmSUCCESS      1
#define MrmCREATE_NEW   3
#define MrmINDEX_RETRY  5      /* Retry on entering index required */
#define MrmINDEX_GT     7      /* Index orders greater-than entry */
#define MrmINDEX_LT     9      /* Index orders less-than entry */
#define MrmPARTIAL_SUCCESS 11   /* operation partly succeeded */

/* Failure return codes */
#define MrmFAILURE      0
#define MrmNOT_FOUND    2
#define MrmEXISTS       4
#define MrmNUL_GROUP    6
#define MrmNUL_TYPE     8
#define MrmWRONG_GROUP  10
#define MrmWRONG_TYPE   12
#define MrmOUT_OF_RANGE 14      /* Record number too big */
#define MrmBAD_RECORD   16      /* Record number wrong type */
#define MrmNULL_DATA    18      /* No data for entry */
#define MrmBAD_DATA_INDEX 20    /* Data index in RID out of range */
#define MrmBAD_ORDER    22      /* Bad ordering specifier */
#define MrmBAD_CONTEXT  24      /* Invalid Mrm context */
#define MrmNOT_VALID    26      /* Validation failure */
#define MrmBAD_BTREE    28      /* GT/LT pointer error in BTree */
#define MrmBAD_WIDGET_REC 30    /* Validation failure on widget record */
#define MrmBAD_CLASS_TYPE 32    /* Class type not a valid Mrmwc... value */
#define MrmNO_CLASS_NAME 34     /* User class name is null */
#define MrmTOO_MANY     36      /* Too many entries requested in some list */
#define MrmBAD_IF_MODULE 38     /* invalid interface module */
#define MrmNULL_DESC    40      /* Arglist or children descriptor null */
#define MrmOUT_OF_BOUNDS 42     /* Argument index out of arglist bounds */
#define MrmBAD_COMPRESS 44     /* Invalid compression code */
#define MrmBAD_ARG_TYPE  46     /* Invalid type, not in RGMrType... */
#define MrmNOT_IMP      48     /* Not yet implemented */
#define MrmNULL_INDEX   50     /* empty index string */
#define MrmBAD_KEY_TYPE  52     /* key must be MrmrIndex or MrmrRID */
#define MrmBAD_CALLBACK  54     /* Invalid callback descriptor */
#define MrmNULL_ROUTINE  56     /* Empty callback routine name string */
#define MrmVEC_TOO_BIG  58     /* too many elements in vector */
#define MrmBAD_HIERARCHY 60     /* invalid Mrm file hierarchy */
#define MrmBAD_CLASS_CODE 62    /* Class code not found in Mrmwc... */
#define MrmDISPLAY_NOT_OPENED 63 /* Display not yet created */
#define MrmEOF          64     /* End of file */
#define MrmUNRESOLVED_REFS 65   /* Unresolved widget refs in callback*/

/* Definitions associated with widget representations */
/* Define the creation callback */
#define MrmNcreateCallback "createCallback"
/* BEGIN OSF Fix pir 2813 */
#define MrmCR_CREATE      XmCR_CREATE
/* END OSF Fix pir 2813 */

/* Code for unknown (user-defined) classes. */
#define MrmwcUnknown      1

/* The data types of values stored in uid files. */
#define MrmRtypeMin       1
#define MrmRtypeInteger   1      /* int */
#define MrmRtypeBoolean   2
#define MrmRtypeChar8     3      /* a nul-terminated string */
#define MrmRtypeChar8Vector 4     /* a vector of char_8 strings */

```

```

#define MrmRtypeCString      5      /* a compound string (DDIS) */
#define MrmRtypeCStringVector 6      /* a vector of compound strings */
#define MrmRtypeFloat        7

/* 8 = TypeCompressed now unused */

#define MrmRtypeCallback     9      /* code for a callback descriptor */
#define MrmRtypePixmapImage 10     /* Pixmap in image form */
#define MrmRtypePixmapDDIF   11     /* Pixmap in DDIF form */
#define MrmRtypeResource     12     /* Mrm resource descriptor */
#define MrmRtypeNull         13     /* no value given */
#define MrmRtypeAddrName     14     /* nul-terminated string to be
                                     interpreted as runtime address */

#define MrmRtypeIconImage    15     /* icon image */
#define MrmRtypeFont         16     /* Mrm font structure */
#define MrmRtypeFontList     17     /* Mrm font list */
#define MrmRtypeColor        18     /* Mrm color descriptor */
#define MrmRtypeColorTable   19     /* Mrm color table */
#define MrmRtypeAny          20     /* Any is allowed in UID file */
#define MrmRtypeTransTable   21     /* Translation table (ASCIZ string) */
#define MrmRtypeClassRecName 22     /* class record name (ASCIZ string) */
#define MrmRtypeIntegerVector 23    /* a vector of integers */
#define MrmRtypeXBitmapFile  24     /* X bitmap file to make pixmap with */
#define MrmRtypeCountedVector 25    /* vector with associated count */
#define MrmRtypeKeysym       26     /* X keysym data type */
#define MrmRtypeSingleFloat  27     /* single float data type */
#define MrmRtypeWideCharacter 28    /* wide_character string type */
#define MrmRtypeFontSet      29
#define MrmRtypeMax          30

/* MRM typedefs */

/* MRM primitive types */
typedef short int      MrmCode ;      /* Used for codes, e.g. Mrmcr... */
typedef unsigned char  MrmSCode ;     /* Short code for small ranges */
typedef unsigned short int MrmOffset ; /* Used for offsets in records */
typedef short int      MrmType ;      /* Used for types, e.g. MrmrType... */
typedef unsigned short int MrmSize ;   /* For size fields */
typedef short int      MrmCount ;      /* For counter fields */
typedef unsigned char  MrmFlag ;      /* flag fields */
typedef long int       MrmResource_id ; /* Resource id in IDB files */
typedef short int      MrmGroup ;      /* For Mrm resource groups */

#define MrmMaxResourceSize 65535 /* (2)16 - 1 */

/* Operating System specific parameter struct. Passed to low level file OPEN. */
#define MrmOsOpenParamVersion 1
typedef struct {
/* The version of this structure. Set to MrmOsOpenParamVersion */
    Cardinal      version;
/* The default name, for systems which can use it */
    char          *default_fname;
/* The related name, for systems which can use it Flag for file clobber (1 means OK to
 * clobber) */
    union {
        unsigned long    related_nam;
        Boolean          clobber_flg;
    } nam_flg;

/* The display, for which the user wants us to open
 * this hierarchy on. Used for the LANG variable. */
    Display          *display;

} MrmOsOpenParam, *MrmOsOpenParamPtr ;

/* The opaque result of opening a Mrm hierarchy. */
typedef struct MrmHierarchyDescStruct *MrmHierarchy;

```

```

/* Structure used to pass name/value pairs to MrmRegisterNames */
typedef struct {
    String          name ;           /* case-sensitive name */
    XtPointer       value ;          /* value/address associated with name */
} MRMRegisterArg, MrmRegisterArg, *MrmRegisterArglist ;

/* Code for unknown (user-defined) classes. */
#define URMwcUnknown 1

```

Figure 10-55. Motif 1.2 Manifest Constants and Data Structures from MwmUtil.h

```

typedef struct
{
    long          flags;
    long          functions;
    long          decorations;
    int           input_mode;
    long          status;
} MotifWmHints;

typedef MotifWmHints    MwmHints;

/* bit definitions for MwmHints.flags */
#define MWM_HINTS_FUNCTIONS    (1L << 0)
#define MWM_HINTS_DECORATIONS (1L << 1)
#define MWM_HINTS_INPUT_MODE  (1L << 2)
#define MWM_HINTS_STATUS      (1L << 3)

/* bit definitions for MwmHints.functions */
#define MWM_FUNC_ALL           (1L << 0)
#define MWM_FUNC_RESIZE       (1L << 1)
#define MWM_FUNC_MOVE         (1L << 2)
#define MWM_FUNC_MINIMIZE     (1L << 3)
#define MWM_FUNC_MAXIMIZE     (1L << 4)
#define MWM_FUNC_CLOSE        (1L << 5)

/* bit definitions for MwmHints.decorations */
#define MWM_DECOR_ALL          (1L << 0)
#define MWM_DECOR_BORDER      (1L << 1)
#define MWM_DECOR_RESIZEH     (1L << 2)
#define MWM_DECOR_TITLE       (1L << 3)
#define MWM_DECOR_MENU        (1L << 4)
#define MWM_DECOR_MINIMIZE    (1L << 5)
#define MWM_DECOR_MAXIMIZE    (1L << 6)

/* values for MwmHints.input_mode */
#define MWM_INPUT_MODELESS          0
#define MWM_INPUT_PRIMARY_APPLICATION_MODAL 1
#define MWM_INPUT_SYSTEM_MODAL     2
#define MWM_INPUT_FULL_APPLICATION_MODAL 3

/* bit definitions for MwmHints.status */
#define MWM_TEAROFF_WINDOW          (1L << 0)

/* The following is for compatibility only. It use is deprecated.*/
#define MWM_INPUT_APPLICATION_MODAL    MWM_INPUT_PRIMARY_APPLICATION_MODAL

/* Contents of the _MWM_INFO property. */

typedef struct
{
    long          flags;

```



```
Window      wm_window;
} MotifWmInfo;

typedef MotifWmInfo      MwmInfo;

/* bit definitions for MotifWmInfo .flags */
#define MWM_INFO_STARTUP_STANDARD      (1L << 0)
#define MWM_INFO_STARTUP_CUSTOM      (1L << 1)

/* Definitions for the _MWM_HINTS property. */

typedef struct
{
    CARD32      flags;
    CARD32      functions;
    CARD32      decorations;
    INT32      inputMode;
    CARD32      status;
} PropMotifWmHints;

typedef PropMotifWmHints      PropMwmHints;

/* number of elements of size 32 in _MWM_HINTS */
#define PROP_MOTIF_WM_HINTS_ELEMENTS      5
#define PROP_MWM_HINTS_ELEMENTS      PROP_MOTIF_WM_HINTS_ELEMENTS

/* atom name for _MWM_HINTS property */
#define _XA_MOTIF_WM_HINTS      "_MOTIF_WM_HINTS"
#define _XA_MWM_HINTS      _XA_MOTIF_WM_HINTS

/* Definitions for the _MWM_MESSAGES property. */

#define _XA_MOTIF_WM_MESSAGES      "_MOTIF_WM_MESSAGES"
#define _XA_MWM_MESSAGES      _XA_MOTIF_WM_MESSAGES

/* atom that enables client frame offset messages */
#define _XA_MOTIF_WM_OFFSET      "_MOTIF_WM_OFFSET"

/* Definitions for the _MWM_MENU property. */

/* atom name for _MWM_MENU property */
#define _XA_MOTIF_WM_MENU      "_MOTIF_WM_MENU"
#define _XA_MWM_MENU      _XA_MOTIF_WM_MENU

/* Definitions for the _MWM_INFO property. */

typedef struct {
    CARD32 flags;
    CARD32 wmWindow;
} PropMotifWmInfo;

typedef PropMotifWmInfo PropMwmInfo;

/* number of elements of size 32 in _MWM_INFO */
#define PROP_MOTIF_WM_INFO_ELEMENTS      2
#define PROP_MWM_INFO_ELEMENTS      PROP_MOTIF_WM_INFO_ELEMENTS

/* atom name for _MWM_INFO property */
#define _XA_MOTIF_WM_INFO      "_MOTIF_WM_INFO"
#define _XA_MWM_INFO      _XA_MOTIF_WM_INFO

/* Miscellaneous atom definitions */
/* atom for motif input bindings */
#define _XA_MOTIF_BINDINGS      "_MOTIF_BINDINGS"
```

Figure 10-56. Motif 1.2 Data Structures from PanedW.h

```
typedef struct _XmPanedWindowClassRec *XmPanedWindowWidgetClass;
typedef struct _XmPanedWindowRec      *XmPanedWindowWidget;
```

Figure 10-57. Motif 1.2 Data Structures from PushB.h

```
typedef struct _XmPushButtonClassRec *XmPushButtonWidgetClass;
typedef struct _XmPushButtonRec      *XmPushButtonWidget;
```

Figure 10-58. Motif 1.2 Data Structures from PushBG.h

```
typedef struct _XmPushButtonGadgetClassRec *XmPushButtonGadgetClass;
typedef struct _XmPushButtonGadgetRec      *XmPushButtonGadget;
typedef struct _XmPushButtonGCacheObjRec   *XmPushButtonGCacheObject;
```

Figure 10-59. Motif 1.2 Manifest Constants and Data Structures from RepType.h

```
#define XmREP_TYPE_INVALID          0x1FFF

typedef unsigned short XmRepTypeId ;

typedef struct
{
    String rep_type_name ;
    String *value_names ;
    unsigned char *values ;
    unsigned char num_values ;
    Boolean reverse_installed ;
    XmRepTypeId rep_type_id ;
}XmRepTypeEntryRec, *XmRepTypeEntry, XmRepTypeListRec, *XmRepTypeList ;
```

Figure 10-60. Motif 1.2 Data Structures from RowColumn.h

```
typedef struct _XmRowColumnClassRec * XmRowColumnWidgetClass;
typedef struct _XmRowColumnRec      * XmRowColumnWidget;
```

Figure 10-61. Motif 1.2 Data Structures from Scale.h

```
/* fast XtIsSubclass define */

typedef struct _XmScaleClassRec * XmScaleWidgetClass;
typedef struct _XmScaleRec      * XmScaleWidget;
```

Figure 10-62. Motif 1.2 Data Structures from Screen.h

```
typedef struct _XmScreenRec *XmScreen;
typedef struct _XmScreenClassRec *XmScreenClass;
```

Figure 10-63. Motif 1.2 Data Structures from ScrollBar.h

```
typedef struct _XmScrollBarClassRec * XmScrollBarWidgetClass;
typedef struct _XmScrollBarRec      * XmScrollBarWidget;
```

Figure 10-64. Motif 1.2 Data Structures from ScrolledW.h

```
typedef struct _XmScrolledWindowClassRec * XmScrolledWindowWidgetClass;
typedef struct _XmScrolledWindowRec      * XmScrolledWindowWidget;
```

Figure 10-65. Motif 1.2 Data Structures from SelectioB.h

```
typedef struct _XmSelectionBoxClassRec * XmSelectionBoxWidgetClass;
typedef struct _XmSelectionBoxRec      * XmSelectionBoxWidget;
```

Figure 10-66. Motif 1.2 Data Structures from SeparatoG.h

```
typedef struct _XmSeparatorGadgetClassRec * XmSeparatorGadgetClass;
typedef struct _XmSeparatorGadgetRec     * XmSeparatorGadget;
typedef struct _XmSeparatorGCacheObjRec  * XmSeparatorGCacheObject;
```

Figure 10-67. Motif 1.2 Data Structures from Separator.h

```
typedef struct _XmSeparatorClassRec * XmSeparatorWidgetClass;
typedef struct _XmSeparatorRec      * XmSeparatorWidget;
```

Figure 10-68. Motif 1.2 Data Structures from Text.h

```
typedef struct _XmTextSourceRec *XmTextSource;
typedef struct _XmTextClassRec *XmTextWidgetClass;
typedef struct _XmTextRec *XmTextWidget;
```

Figure 10-69. Motif 1.2 Data Structures from TextF.h

```
typedef struct _XmTextFieldClassRec *XmTextFieldWidgetClass;
typedef struct _XmTextFieldRec *XmTextFieldWidget;
```

Figure 10-70. Motif 1.2 Data Structures from ToggleB.h

```
typedef struct _XmToggleButtonClassRec *XmToggleButtonWidgetClass;
typedef struct _XmToggleButtonRec      *XmToggleButtonWidget;
```

Figure 10-71. Motif 1.2 Data Structures from ToggleBG.h

```
typedef struct _XmToggleButtonGadgetClassRec *XmToggleButtonGadgetClass;
typedef struct _XmToggleButtonGadgetRec     *XmToggleButtonGadget;
typedef struct _XmToggleButtonGCacheObjRec  *XmToggleButtonGCacheObject;
```

Figure 10-72. Motif 1.2 Data Structures from VendorS.h

```
typedef struct _XmVendorShellRec *XmVendorShellWidget;
typedef struct _XmVendorShellClassRec *XmVendorShellWidgetClass;
```

Figure 10-73. Motif 1.2 Manifest Constants from VirtKeys.h

```
#define _OSF_Keysyms
```

```
#define osfXK_BackSpace      0x1004FF08
#define osfXK_Insert         0x1004FF63
#define osfXK_Delete         0x1004FFFF
```

```

#define osfXX_Copy          0x1004FF02
#define osfXX_Cut          0x1004FF03
#define osfXX_Paste        0x1004FF04

#define osfXX_AddMode       0x1004FF31
#define osfXX_PrimaryPaste  0x1004FF32
#define osfXX_QuickPaste   0x1004FF33
#define osfXX_PageLeft     0x1004FF40
#define osfXX_PageUp       0x1004FF41
#define osfXX_PageDown     0x1004FF42
#define osfXX_PageRight    0x1004FF43
#define osfXX_EndLine      0x1004FF57
#define osfXX_BeginLine    0x1004FF58
#define osfXX_Activate     0x1004FF44
#define osfXX_MenuBar      0x1004FF45
#define osfXX_Clear        0x1004FF0B
#define osfXX_Cancel       0x1004FF69
#define osfXX_Help         0x1004FF6A
#define osfXX_Menu         0x1004FF67
#define osfXX_Select       0x1004FF60
#define osfXX_Undo         0x1004FF65
#define osfXX_Left         0x1004FF51
#define osfXX_Up           0x1004FF52
#define osfXX_Right        0x1004FF53
#define osfXX_Down         0x1004FF54

Motif 1.2 Manifest Constants and Data Structures from Xm.h
/* define used to denote an unspecified pixmap */

#define XmUNSPECIFIED_PIXMAP      2

/* Defines for resources to be defaulted by vendors. String are initialized in Xmos.c */

#define XmSTRING_OS_CHARSET          XmSTRING_ISO8859_1
#ifdef XmFALLBACK_CHARSET
#define XmFALLBACK_CHARSET          XmSTRING_ISO8859_1
#endif

#define XmDEFAULT_FONT              _XmSDEFAULT_FONT
#define XmDEFAULT_BACKGROUND        _XmSDEFAULT_BACKGROUND
#define XmDEFAULT_DARK_THRESHOLD    15
#define XmDEFAULT_LIGHT_THRESHOLD   77
#define XmDEFAULT_FOREGROUND_THRESHOLD 35

/* XmString structure defines. These must be here (at the start of the file)
 * because they are used later on. */

typedef enum{ XmFONT_IS_FONT, XmFONT_IS_FONTSET } XmFontType;

enum{
    XmSTRING_DIRECTION_L_TO_R,      XmSTRING_DIRECTION_R_TO_L
};
#define XmSTRING_DIRECTION_DEFAULT ((XmStringDirection) 255)

typedef unsigned char * XmString; /* opaque to outside */
typedef XmString * XmStringTable; /* opaque to outside */
typedef char * XmStringCharSet; /* Null term string */
typedef unsigned char XmStringComponentType; /* component tags */
typedef unsigned char XmStringDirection;

typedef struct _XmFontListRec *XmFontListEntry; /* opaque to outside */
typedef struct _XmFontListRec *XmFontList; /* opaque to outside */
typedef struct __XmStringContextRec * _XmStringContext; /* opaque to outside */
typedef struct __XmStringRec * _XmString; /* opaque to outside */
typedef struct _XmtStringContextRec *XmStringContext; /* opaque to outside */
typedef struct _XmFontListContextRec *XmFontContext; /* opaque to outside */

```

```

enum{    XmSTRING_COMPONENT_UNKNOWN,    XmSTRING_COMPONENT_CHARSET,
        XmSTRING_COMPONENT_TEXT,      XmSTRING_COMPONENT_DIRECTION,
        XmSTRING_COMPONENT_SEPARATOR,  XmSTRING_COMPONENT_LOCALE_TEXT
        /* 6-125 reserved */
    } ;

#define XmSTRING_COMPONENT_END          ((XmStringComponentType) 126)

#define XmSTRING_COMPONENT_USER_BEGIN   ((XmStringComponentType) 128)
        /* 128-255 are user tags */
#define XmSTRING_COMPONENT_USER_END     ((XmStringComponentType) 255)

/* Base widget class and record definitions.
 *   Included are the definitions for XmPrimitive, XmManager,
 *   and XmGadget. */

/* Primitive widget class and record definitions */
typedef struct _XmPrimitiveClassRec * XmPrimitiveWidgetClass;
typedef struct _XmPrimitiveRec      * XmPrimitiveWidget;

/* Gadget widget class and record definitions */
typedef struct _XmGadgetClassRec * XmGadgetClass;
typedef struct _XmGadgetRec      * XmGadget;

/* Manager widger class and record definitions */
typedef struct _XmManagerClassRec * XmManagerWidgetClass;
typedef struct _XmManagerRec      * XmManagerWidget;

/* Primitive Resources and define values */
/* size policy values */
enum{    XmCHANGE_ALL,                  XmCHANGE_NONE,
        XmCHANGE_WIDTH,                XmCHANGE_HEIGHT
    } ;

/* unit type values */
enum{    XmPIXELS,                      Xm100TH_MILLIMETERS,
        Xm1000TH_INCHES,                Xm100TH_POINTS,
        Xm100TH_FONT_UNITS
    } ;

/* DeleteResponse values */

enum{    XmDESTROY,                     XmUNMAP,
        XmDO_NOTHING
    } ;
enum{    XmEXPLICIT,                     XmPOINTER
    } ;
/*****
 * Navigation defines
 *****/

enum{    XmNONE,                        XmTAB_GROUP,
        XmSTICKY_TAB_GROUP,            XmEXCLUSIVE_TAB_GROUP
    } ;

#define XmDYNAMIC_DEFAULT_TAB_GROUP     ((XmNavigationType) 255)

/*****
 * Audible warning
 *****/

enum{    /* XmNONE */                      XmBELL = 1
    } ;

```

```

/*****
 * Menu defines
 *****/

enum{   XmNO_ORIENTATION,           XmVERTICAL,
        XmHORIZONTAL
      } ;

enum{   XmWORK_AREA,                XmMENU_BAR,
        XmMENU_PULLDOWN,           XmMENU_POPUP,
        XmMENU_OPTION
      } ;

enum{   XmNO_PACKING,               XmPACK_TIGHT,
        XmPACK_COLUMN,             XmPACK_NONE
      } ;

enum{ /* XmALIGNMENT_BASELINE_TOP,   XmALIGNMENT_CENTER,
        XmALIGNMENT_BASELINE_BOTTOM, */ XmALIGNMENT_CONTENTS_TOP = 3,
        XmALIGNMENT_CONTENTS_BOTTOM
      } ;

enum{   XmTEAR_OFF_ENABLED,         XmTEAR_OFF_DISABLED
      } ;

enum{   XmUNPOST,                  XmUNPOST_AND_REPLAY
      } ;

enum{   XmLAST_POSITION = -1,       XmFIRST_POSITION
      } ;

/*****
 * Label/Frame defines
 *****/

enum{   XmALIGNMENT_BEGINNING,      XmALIGNMENT_CENTER,
        XmALIGNMENT_END
      } ;

enum{   XmALIGNMENT_BASELINE_TOP,   /* XmALIGNMENT_CENTER, */
        XmALIGNMENT_BASELINE_BOTTOM = 2, XmALIGNMENT_WIDGET_TOP,
        XmALIGNMENT_WIDGET_BOTTOM
      } ;

/*****
 * Frame defines
 *****/

enum{   XmFRAME_GENERIC_CHILD,      XmFRAME_WORKAREA_CHILD,
        XmFRAME_TITLE_CHILD
      } ;

/*****
 * ToggleButton defines
 *****/

enum{   XmN_OF_MANY = 1,            XmONE_OF_MANY
      } ;

/*****
 * Form defines
 *****/

enum{   XmATTACH_NONE,              XmATTACH_FORM,
        XmATTACH_OPPOSITE_FORM,    XmATTACH_WIDGET,
        XmATTACH_OPPOSITE_WIDGET,  XmATTACH_POSITION,
        XmATTACH_SELF
      } ;

enum{   XmRESIZE_NONE,              XmRESIZE_GROW,
        XmRESIZE_ANY
      } ;

/*****
 * Callback reasons
 *****/

enum{   XmCR_NONE,                 XmCR_HELP,

```

```

        XmCR_VALUE_CHANGED,
        XmCR_DECREMENT,
        XmCR_PAGE_DECREMENT,
        XmCR_TO_BOTTOM,
        XmCR_ACTIVATE,
        XmCR_DISARM,
        XmCR_UNMAP,
        XmCR_LOSING_FOCUS,
        XmCR_MOVING_INSERT_CURSOR,
        XmCR_SINGLE_SELECT,
        XmCR_EXTENDED_SELECT,
        XmCR_DEFAULT_ACTION,
        XmCR_CLIPBOARD_DATA_DELETE,
        XmCR_OK,
        XmCR_APPLY = 34,
        XmCR_COMMAND_ENTERED,
        XmCR_EXPOSE,
        XmCR_INPUT,
        XmCR_LOSE_PRIMARY,
        XmCR_TEAR_OFF_ACTIVATE,
        XmCR_OBSCURED_TRAVERSAL
        XmCR_INCREMENT,
        XmCR_PAGE_INCREMENT,
        XmCR_TO_TOP,
        XmCR_DRAG,
        XmCR_ARM,
        XmCR_MAP = 16,
        XmCR_FOCUS,
        XmCR_MODIFYING_TEXT_VALUE,
        XmCR_EXECUTE,
        XmCR_MULTIPLE_SELECT,
        XmCR_BROWSE_SELECT,
        XmCR_CLIPBOARD_DATA_REQUEST,
        XmCR_CASCADING,
        XmCR_CANCEL,
        XmCR_NO_MATCH,
        XmCR_COMMAND_CHANGED,
        XmCR_RESIZE,
        XmCR_GAIN_PRIMARY,
        XmCR_CREATE,
        XmCR_TEAR_OFF_DEACTIVATE,
    } ;

/*****
 * Callback structures
 *****/

typedef struct
{
    int    reason;
    XEvent *event;
} XmAnyCallbackStruct;

typedef struct
{
    int    reason;
    XEvent *event;
    int    click_count;
} XmArrowButtonCallbackStruct;

typedef struct
{
    int    reason;
    XEvent *event;
    Window window;
} XmDrawingAreaCallbackStruct;

typedef struct
{
    int    reason;
    XEvent *event;
    Window window;
    int    click_count;
} XmDrawnButtonCallbackStruct;

typedef struct
{
    int    reason;
    XEvent *event;
    int    click_count;
} XmPushButtonCallbackStruct;

typedef struct
{
    int    reason;
    XEvent *event;

```

```

    Widget widget;
    char *data;
    char *callbackstruct;
} XmRowColumnCallbackStruct;

typedef struct
{
    int reason;
    XEvent * event;
    int value;
    int pixel;
} XmScrollBarCallbackStruct;

typedef struct
{
    int reason;
    XEvent * event;
    int set;
} XmToggleButtonCallbackStruct;

typedef struct
{
    int reason;
    XEvent *event;
    XmString item;
    int item_length;
    int item_position;
    XmString *selected_items;
    int selected_item_count;
    int *selected_item_positions;
    char selection_type;
} XmListCallbackStruct;

typedef struct
{
    int reason;
    XEvent *event;
    XmString value;
    int length;
} XmSelectionBoxCallbackStruct;

typedef struct
{
    int reason;
    XEvent *event;
    XmString value;
    int length;
} XmCommandCallbackStruct;

typedef struct
{
    int reason;
    XEvent *event;
    XmString value;
    int length;
    XmString mask;
    int mask_length;
    XmString dir ;
    int dir_length ;
    XmString pattern ;
    int pattern_length ;
} XmFileSelectionBoxCallbackStruct;

typedef struct

```



```

{
    int reason;
    XEvent * event;
    int value;
} XmScaleCallbackStruct;

/*****
 *  PushButton defines
 *****/

enum{    XmMULTICLICK_DISCARD,          XmMULTICLICK_KEEP
        } ;

/*****
 *  DrawnButton defines
 *****/

enum{    XmSHADOW_IN = 7,              XmSHADOW_OUT
        } ;

/*****
 *  Arrow defines
 *****/

enum{    XmARROW_UP,                   XmARROW_DOWN,
        XmARROW_LEFT,                 XmARROW_RIGHT
        } ;

/*****
 *  Separator defines
 *  Note: XmINVALID_SEPARATOR_TYPE marks the last+1 separator type
 *****/

enum{    XmNO_LINE,                    XmSINGLE_LINE,
        XmDOUBLE_LINE,                XmSINGLE_DASHED_LINE,
        XmDOUBLE_DASHED_LINE,         XmSHADOW_ETCHED_IN,
        XmSHADOW_ETCHED_OUT,          XmSHADOW_ETCHED_IN_DASH,
        XmSHADOW_ETCHED_OUT_DASH,     XmINVALID_SEPARATOR_TYPE
        } ;

enum{    XmPIXMAP = 1,                 XmSTRING
        } ;

/*****
 *  Drag and Drop #defines
 *****/

enum{    XmWINDOW,                     /* XmPIXMAP, */
        XmCURSOR = 2
        } ;

/*****
 *  ScrollBar #defines
 *****/

enum{    XmMAX_ON_TOP,                 XmMAX_ON_BOTTOM,
        XmMAX_ON_LEFT,                XmMAX_ON_RIGHT
        } ;

/*****
 *
 *  List Widget defines
 *
 *****/

enum{    XmSINGLE_SELECT,                XmMULTIPLE_SELECT,
        XmEXTENDED_SELECT,             XmBROWSE_SELECT
        } ;

```

```

enum{      XmSTATIC,                      XmDYNAMIC
          } ;

/*****
 *
 * Scrolled Window defines.
 *
 *****/

enum{      XmVARIABLE,                      XmCONSTANT,
          XmRESIZE_IF_POSSIBLE
          } ;

enum{      XmAUTOMATIC,                      XmAPPLICATION_DEFINED
          } ;

enum{      /* XmSTATIC */                      XmAS_NEEDED = 1
          } ;

#define SW_TOP          1
#define SW_BOTTOM       0
#define SW_LEFT         2
#define SW_RIGHT        0

#define XmTOP_LEFT      (SW_TOP | SW_LEFT)
#define XmBOTTOM_LEFT   (SW_BOTTOM | SW_LEFT)
#define XmTOP_RIGHT     (SW_TOP | SW_RIGHT)
#define XmBOTTOM_RIGHT  (SW_BOTTOM | SW_RIGHT)

/*****
 *
 * MainWindow Resources
 *
 *****/

enum{      XmCOMMAND_ABOVE_WORKSPACE,      XmCOMMAND_BELOW_WORKSPACE
          } ;

/*****
 *
 * Text Widget defines
 *
 *****/

enum{      XmMULTI_LINE_EDIT,                XmSINGLE_LINE_EDIT
          } ;

typedef enum{
    XmTEXT_FORWARD,
    XmTEXT_BACKWARD
} XmTextDirection;

typedef long XmTextPosition;
typedef Atom XmTextFormat;

#define XmFMT_8_BIT      ((XmTextFormat) XA_STRING)      /* 8-bit text. */
#define XmFMT_16_BIT     ((XmTextFormat) 2)              /* 16-bit text. */

#define FMT8BIT          XmFMT_8_BIT                  /* For backwards compatibility only.*/
#define FMT16BIT         XmFMT_16_BIT                 /* For backwards compatibility only.*/

typedef enum{
    XmSELECT_POSITION,                      XmSELECT_WHITESPACE,
    XmSELECT_WORD,                          XmSELECT_LINE,
    XmSELECT_ALL,                          XmSELECT_PARAGRAPH
} XmTextScanType ;

typedef enum{
    XmHIGHLIGHT_NORMAL,                      XmHIGHLIGHT_SELECTED,

```

```

        XmHIGHLIGHT_SECONDARY_SELECTED
    } XmHighlightMode ;

/* XmTextBlock's are used to pass text around. */

typedef struct {
    char *ptr;                /* Pointer to data. */
    int length;               /* Number of bytes of data. */
    XmTextFormat format;      /* Representations format */
} XmTextBlockRec, *XmTextBlock;

typedef struct
{
    int reason;
    XEvent *event;
    Boolean doit;
    long currInsert, newInsert;
    long startPos, endPos;
    XmTextBlock text;
} XmTextVerifyCallbackStruct, *XmTextVerifyPtr;

/* XmTextBlockWcs's are used in 1.2 modifyVerifyWcs callbacks for Text[Field]
 * widgets. */

typedef struct {
    wchar_t *wcsptr;         /* Pointer to data. */
    int length;              /* Number of bytes of data. */
} XmTextBlockRecWcs, *XmTextBlockWcs;

typedef struct
{
    int reason;
    XEvent *event;
    Boolean doit;
    long currInsert, newInsert;
    long startPos, endPos;
    XmTextBlockWcs text;
} XmTextVerifyCallbackStructWcs, *XmTextVerifyPtrWcs;

/* functions renamed after 1.0 release due to resource name overlap */
#define XmTextGetTopPosition      XmTextGetTopCharacter
#define XmTextSetTopPosition      XmTextSetTopCharacter

#define XmCOPY_FAILED            0
#define XmCOPY_SUCCEEDED         1
#define XmCOPY_TRUNCATED         2

/*****
 *
 * DIALOG defines.. BulletinBoard and things common to its subclasses *
 *      CommandBox      MessageBox      Selection      FileSelection      *
 *
 *****/

/* child type defines for Xm...GetChild() */

enum{    XmDIALOG_NONE,                XmDIALOG_APPLY_BUTTON,
        XmDIALOG_CANCEL_BUTTON,      XmDIALOG_DEFAULT_BUTTON,
        XmDIALOG_OK_BUTTON,          XmDIALOG_FILTER_LABEL,
        XmDIALOG_FILTER_TEXT,        XmDIALOG_HELP_BUTTON,
        XmDIALOG_LIST,               XmDIALOG_LIST_LABEL,
        XmDIALOG_MESSAGE_LABEL,      XmDIALOG_SELECTION_LABEL,
        XmDIALOG_SYMBOL_LABEL,       XmDIALOG_TEXT,
        XmDIALOG_SEPARATOR,          XmDIALOG_DIR_LIST,
        XmDIALOG_DIR_LIST_LABEL

```

```

    } ;

#define XmDIALOG_HISTORY_LIST      XmDIALOG_LIST
#define XmDIALOG_PROMPT_LABEL     XmDIALOG_SELECTION_LABEL
#define XmDIALOG_VALUE_TEXT       XmDIALOG_TEXT
#define XmDIALOG_COMMAND_TEXT     XmDIALOG_TEXT
#define XmDIALOG_FILE_LIST        XmDIALOG_LIST
#define XmDIALOG_FILE_LIST_LABEL  XmDIALOG_LIST_LABEL

/* dialog style defines */

enum{    XmDIALOG_MODELESS,          XmDIALOG_PRIMARY_APPLICATION_MODAL,
        XmDIALOG_FULL_APPLICATION_MODAL, XmDIALOG_SYSTEM_MODAL
    } ;

/* The following is for compatibility only. Its use is deprecated.
*/
#define XmDIALOG_APPLICATION_MODAL    XmDIALOG_PRIMARY_APPLICATION_MODAL

/*****
 * XmSelectionBox, XmFileSelectionBox and XmCommand - misc. stuff
 *****/

/* Defines for Selection child placement
*/
enum{    XmPLACE_TOP,                XmPLACE_ABOVE_SELECTION,
        XmPLACE_BELOW_SELECTION
    } ;

/* Defines for file type mask:
*/
#define XmFILE_DIRECTORY (1 << 0)
#define XmFILE_REGULAR   (1 << 1)
#define XmFILE_ANY_TYPE  (XmFILE_DIRECTORY | XmFILE_REGULAR)

/* Defines for selection dialog type:
*/
enum{    XmDIALOG_WORK_AREA,          XmDIALOG_PROMPT,
        XmDIALOG_SELECTION,          XmDIALOG_COMMAND,
        XmDIALOG_FILE_SELECTION
    } ;

/*****
 * XmMessageBox          stuff not common to other dialogs
 *****/

/* defines for dialog type */

enum{    XmDIALOG_TEMPLATE,          XmDIALOG_ERROR,
        XmDIALOG_INFORMATION,       XmDIALOG_MESSAGE,
        XmDIALOG_QUESTION,          XmDIALOG_WARNING,
        XmDIALOG_WORKING
    } ;

/* Traversal types */

typedef enum{
    XmVISIBILITY_UNOBSURED,          XmVISIBILITY_PARTIALLY_OBSCURED,
    XmVISIBILITY_FULLY_OBSCURED
} XmVisibility ;

typedef enum{
    XmTRAVERSE_CURRENT,              XmTRAVERSE_NEXT,
    XmTRAVERSE_PREV,                  XmTRAVERSE_HOME,

```

```

        XmTRAVERSE_NEXT_TAB_GROUP,      XmTRAVERSE_PREV_TAB_GROUP,
        XmTRAVERSE_UP,                  XmTRAVERSE_DOWN,
        XmTRAVERSE_LEFT,                XmTRAVERSE_RIGHT
    } XmTraversalDirection ;
typedef struct _XmTraverseObscuredCallbackStruct
{
    int                reason ;
    XEvent *           event ;
    Widget             traversal_destination ;
    XmTraversalDirection direction ;
} XmTraverseObscuredCallbackStruct ;

typedef unsigned char  XmNavigationType;

/*****
 *
 * SimpleMenu declarations and definitions.
 *
 *****/

typedef unsigned char XmButtonType;
typedef XmButtonType * XmButtonTypeTable;
typedef KeySym * XmKeySymTable;
typedef XmStringCharSet * XmStringCharSetTable;

enum{
    XmPUSHBUTTON = 1,                XmTOGGLEBUTTON,
    XmRADIOBUTTON,                  XmCASCADEBUTTON,
    XmSEPARATOR,                    XmDOUBLE_SEPARATOR,
    XmTITLE
} ;
#define XmCHECKBUTTON                XmTOGGLEBUTTON

/*****      BaseClass.c      *****/

typedef struct _XmSecondaryResourceDataRec{
    XmResourceBaseProc  base_proc;
    XtPointer           client_data;
    String              name;
    String              res_class;
    XtResourceList      resources;
    Cardinal            num_resources;
}XmSecondaryResourceDataRec, *XmSecondaryResourceData;

/*****      Primitive.c      *****/

typedef long XmOffset;
typedef XmOffset *XmOffsetPtr;

```

Figure 10-74. Motif 1.2 Manifest Constants from XmStrDefs.h

```

#define XmS                                ""
#define XmCAccelerator                    "Accelerator"
#define XmCAcceleratorText                "AcceleratorText"
#define XmCAdjustLast                     "AdjustLast"
#define XmCAdjustMargin                   "AdjustMargin"
#define XmCAlignment                       "Alignment"
#define XmCAllowOverlap                   "AllowOverlap"
#define XmCAnimationMask                  "AnimationMask"
#define XmCAnimationPixmap                 "AnimationPixmap"
#define XmCAnimationPixmapDepth            "AnimationPixmapDepth"
#define XmCAnimationStyle                  "AnimationStyle"

```

```

#define XmCApplyLabelString      "ApplyLabelString"
#define XmCArmCallback          "ArmCallback"
#define XmCArmColor             "ArmColor"
#define XmCArmPixmap            "ArmPixmap"
#define XmCArrowDirection       "ArrowDirection"
#define XmCAttachment           "Attachment"
#define XmCAudibleWarning       "AudibleWarning"
#define XmCAutoShowCursorPosition "AutoShowCursorPosition"
#define XmCAutoUnmanage         "AutoUnmanage"
#define XmCAutomaticSelection   "AutomaticSelection"
#define XmCAvailability         "Availability"
#define XmCBackgroundPixmap     "BackgroundPixmap"
#define XmCBlendModel           "BlendModel"
#define XmCBlinkRate            "BlinkRate"
#define XmCBottomShadowColor    "BottomShadowColor"
#define XmCBottomShadowPixmap   "BottomShadowPixmap"
#define XmCButtonAcceleratorText "ButtonAcceleratorText"
#define XmCButtonAccelerators   "ButtonAccelerators"
#define XmCButtonCount          "ButtonCount"
#define XmCButtonFontList       "ButtonFontList"
#define XmCButtonMnemonicCharSets "ButtonMnemonicCharSets"
#define XmCButtonMnemonics      "ButtonMnemonics"
#define XmCButtonSet            "ButtonSet"
#define XmCButtonType           "ButtonType"
#define XmCButtons              "Buttons"
#define XmCCancelLabelString    "CancelLabelString"
#define XmCChildHorizontalAlignment "ChildHorizontalAlignment"
#define XmCChildHorizontalSpacing "ChildHorizontalSpacing"
#define XmCChildPlacement       "ChildPlacement"
#define XmCChildType            "ChildType"
#define XmCChildVerticalAlignment "ChildVerticalAlignment"
#define XmCChildren             "Children"
#define XmCClientData           "ClientData"
#define XmCClipWindow           "ClipWindow"
#define XmCColumns              "Columns"
#define XmCCommandWindow        "CommandWindow"
#define XmCCommandWindowLocation "CommandWindowLocation"
#define XmCConvertProc          "ConvertProc"
#define XmCCursorBackground     "CursorBackground"
#define XmCCursorForeground     "CursorForeground"
#define XmCCursorPosition       "CursorPosition"
#define XmCCursorPositionVisible "CursorPositionVisible"
#define XmCDarkThreshold        "DarkThreshold"
#define XmCDecimalPoints        "DecimalPoints"
#define XmCDefaultButtonShadowThickness "DefaultButtonShadowThickness"
#define XmCDefaultButtonType    "DefaultButtonType"
#define XmCDefaultCopyCursorIcon "DefaultCopyCursorIcon"
#define XmCDefaultFontList      "DefaultFontList"
#define XmCDefaultInvalidCursorIcon "DefaultInvalidCursorIcon"
#define XmCDefaultLinkCursorIcon "DefaultLinkCursorIcon"
#define XmCDefaultMoveCursorIcon "DefaultMoveCursorIcon"
#define XmCDefaultNoneCursorIcon "DefaultNoneCursorIcon"
#define XmCDefaultPosition      "DefaultPosition"
#define XmCDefaultSourceCursorIcon "DefaultSourceCursorIcon"
#define XmCDefaultValidCursorIcon "DefaultValidCursorIcon"
#define XmCDeleteResponse       "DeleteResponse"
#define XmCDesktopParent        "DesktopParent"
#define XmCDialogStyle          "DialogStyle"
#define XmCDialogTitle          "DialogTitle"
#define XmCDialogType           "DialogType"
#define XmCDirListItemCount     "DirListItemCount"
#define XmCDirListItems         "DirListItems"
#define XmCDirListLabelString   "DirListLabelString"
#define XmCDirMask              "DirMask"
#define XmCDirSearchProc        "DirSearchProc"

```

```

#define XmCDirSpec "DirSpec"
#define XmCDirectory "Directory"
#define XmCDirectoryValid "DirectoryValid"
#define XmCDisarmCallback "DisarmCallback"
#define XmCDoubleClickInterval "DoubleClickInterval"
#define XmCDragContextClass "DragContextClass"
#define XmCDragDropFinishCallback "DragDropFinishCallback"
#define XmCDragIconClass "DragIconClass"
#define XmCDragInitiatorProtocolStyle "DragInitiatorProtocolStyle"
#define XmCDragMotionCallback "DragMotionCallback"
#define XmCDragOperations "DragOperations"
#define XmCDragOverMode "DragOverMode"
#define XmCDragProc "DragProc"
#define XmCDragReceiverProtocolStyle "DragReceiverProtocolStyle"
#define XmCDropProc "DropProc"
#define XmCDropRectangles "DropRectangles"
#define XmCDropSiteActivity "DropSiteActivity"
#define XmCDropSiteEnterCallback "DropSiteEnterCallback"
#define XmCDropSiteLeaveCallback "DropSiteLeaveCallback"
#define XmCDropSiteManagerClass "DropSiteManagerClass"
#define XmCDropSiteOperations "DropSiteOperations"
#define XmCDropSiteType "DropSiteType"
#define XmCDropStartCallback "DropStartCallback"
#define XmCDropTransferClass "DropTransferClass"
#define XmCDropTransfers "DropTransfers"
#define XmCEditable "Editable"
#define XmCEntryBorder "EntryBorder"
#define XmCEntryClass "EntryClass"
#define XmCExportTargets "ExportTargets"
#define XmCExposeCallback "ExposeCallback"
#define XmCExtensionType "ExtensionType"
#define XmCFileListItemCount "FileListItemCount"
#define XmCFileListItem "FileListItem"
#define XmCFileListLabelString "FileListLabelString"
#define XmCFileSearchProc "FileSearchProc"
#define XmCFileTypeMask "FileTypeMask"
#define XmCFillOnArm "FillOnArm"
#define XmCFillOnSelect "FillOnSelect"
#define XmCFilterLabelString "FilterLabelString"
#define XmCFontList "FontList"
#define XmCForegroundThreshold "ForegroundThreshold"
#define XmCHelpLabelString "HelpLabelString"
#define XmCHighlightColor "HighlightColor"
#define XmCHighlightOnEnter "HighlightOnEnter"
#define XmCHighlightPixmap "HighlightPixmap"
#define XmCHighlightThickness "HighlightThickness"
#define XmCHorizontalFontUnit "HorizontalFontUnit"
#define XmCHorizontalScrollBar "HorizontalScrollBar"
#define XmCHot "Hot"
#define XmCICCHandle "ICCHandle"
#define XmCImportTargets "ImportTargets"
#define XmCIncrement "Increment"
#define XmCIncremental "Incremental"
#define XmCIndicatorOn "IndicatorOn"
#define XmCIndicatorSize "IndicatorSize"
#define XmCIndicatorType "IndicatorType"
#define XmCInitialDelay "InitialDelay"
#define XmCInitialFocus "InitialFocus"
#define XmCInputCreate "InputCreate"
#define XmCInputMethod "InputMethod"
#define XmCInvalidCursorForeground "InvalidCursorForeground"
#define XmCIsAligned "IsAligned"
#define XmCIsHomogeneous "IsHomogeneous"
#define XmCItemCount "ItemCount"
#define XmCItems "Items"

```

```
#define XmCKeyboardFocusPolicy "KeyboardFocusPolicy"
#define XmCLabelFontList "LabelFontList"
#define XmCLabelInsensitivePixmap "LabelInsensitivePixmap"
#define XmCLabelPixmap "LabelPixmap"
#define XmCLabelString "LabelString"
#define XmCLabelType "LabelType"
#define XmCLightThreshold "LightThreshold"
#define XmCListLabelString "ListLabelString"
#define XmCListMarginHeight "ListMarginHeight"
#define XmCListMarginWidth "ListMarginWidth"
#define XmCListSizePolicy "ListSizePolicy"
#define XmCListSpacing "ListSpacing"
#define XmCListUpdated "ListUpdated"
#define XmCLogicalParent "LogicalParent"
#define XmCMainWindowMarginHeight "MainWindowMarginHeight"
#define XmCMainWindowMarginWidth "MainWindowMarginWidth"
#define XmCMappingDelay "MappingDelay"
#define XmCMarginBottom "MarginBottom"
#define XmCMarginHeight "MarginHeight"
#define XmCMarginLeft "MarginLeft"
#define XmCMarginRight "MarginRight"
#define XmCMarginTop "MarginTop"
#define XmCMarginWidth "MarginWidth"
#define XmCMask "Mask"
#define XmCMaxItems "MaxItems"
#define XmCMaxLength "MaxLength"
#define XmCMaxValue "MaxValue"
#define XmCMaximum "Maximum"
#define XmCMenuBar "MenuBar"
#define XmCMenuPost "MenuPost"
#define XmCMenuWidget "MenuWidget"
#define XmCMessageProc "MessageProc"
#define XmCMessageWindow "MessageWindow"
#define XmCMinimizeButtons "MinimizeButtons"
#define XmCMinimum "Minimum"
#define XmCMnemonic "Mnemonic"
#define XmCMnemonicCharSet "MnemonicCharSet"
#define XmCMoveOpaque "MoveOpaque"
#define XmCMultiClick "MultiClick"
#define XmCMustMatch "MustMatch"
#define XmCMwmDecorations "MwmDecorations"
#define XmCMwmFunctions "MwmFunctions"
#define XmCMwmInputMode "MwmInputMode"
#define XmCMwmMenu "MwmMenu"
#define XmCMwmMessages "MwmMessages"
#define XmCNavigationType "NavigationType"
#define XmCNeedsMotion "NeedsMotion"
#define XmCNoMatchString "NoMatchString"
#define XmCNoResize "NoResize"
#define XmCNoneCursorForeground "NoneCursorForeground"
#define XmCNotifyProc "NotifyProc"
#define XmCNumChildren "NumChildren"
#define XmCNumColumns "NumColumns"
#define XmCNumDropRectangles "NumDropRectangles"
#define XmCNumDropTransfers "NumDropTransfers"
#define XmCNumExportTargets "NumExportTargets"
#define XmCNumImportTargets "NumImportTargets"
#define XmCOffset "Offset"
#define XmCOKLabelString "OkLabelString"
#define XmCOperationChangedCallback "OperationChangedCallback"
#define XmCOperationCursorIcon "OperationCursorIcon"
#define XmCOptionLabel "OptionLabel"
#define XmCOptionMnemonic "OptionMnemonic"
#define XmCOutputCreate "OutputCreate"
#define XmCPacking "Packing"
```



```

#define XmCPageIncrement "PageIncrement"
#define XmCPaneMaximum "PaneMaximum"
#define XmCPaneMinimum "PaneMinimum"
#define XmCPattern "Pattern"
#define XmCPendingDelete "PendingDelete"
#define XmCPopupEnabled "PopupEnabled"
#define XmCPositionIndex "PositionIndex"
#define XmCPostFromButton "PostFromButton"
#define XmCPostFromCount "PostFromCount"
#define XmCPostFromList "PostFromList"
#define XmCPreeditType "PreeditType"
#define XmCProcessingDirection "ProcessingDirection"
#define XmCPromptString "PromptString"
#define XmCProtocolCallback "ProtocolCallback"
#define XmCPushButtonEnabled "PushButtonEnabled"
#define XmCQualifySearchDataProc "QualifySearchDataProc"
#define XmCRadioAlwaysOne "RadioAlwaysOne"
#define XmCRadioBehavior "RadioBehavior"
#define XmCRecomputeSize "RecomputeSize"
#define XmCRectangles "Rectangles"
#define XmCRepeatDelay "RepeatDelay"
#define XmCResizeCallback "ResizeCallback"
#define XmCResizeHeight "ResizeHeight"
#define XmCResizePolicy "ResizePolicy"
#define XmCResizeWidth "ResizeWidth"
#define XmCRowColumnType "RowColumnType"
#define XmCRows "Rows"
#define XmCRubberPositioning "RubberPositioning"
#define XmCSashHeight "SashHeight"
#define XmCSashIndent "SashIndent"
#define XmCSashWidth "SashWidth"
#define XmCScaleHeight "ScaleHeight"
#define XmCScaleMultiple "ScaleMultiple"
#define XmCScaleWidth "ScaleWidth"
#define XmCScroll "Scroll"
#define XmCScrollBarDisplayPolicy "ScrollBarDisplayPolicy"
#define XmCScrollBarPlacement "ScrollBarPlacement"
#define XmCScrollSide "ScrollSide"
#define XmCScrolledWindowMarginHeight "ScrolledWindowMarginHeight"
#define XmCScrolledWindowMarginWidth "ScrolledWindowMarginWidth"
#define XmCScrollingPolicy "ScrollingPolicy"
#define XmCSelectColor "SelectColor"
#define XmCSelectInsensitivePixmap "SelectInsensitivePixmap"
#define XmCSelectPixmap "SelectPixmap"
#define XmCSelectThreshold "SelectThreshold"
#define XmCSelectedItemCount "SelectedItemCount"
#define XmCSelectedItems "SelectedItems"
#define XmCSelectionArrayCount "SelectionArrayCount"
#define XmCSelectionLabelString "SelectionLabelString"
#define XmCSelectionPolicy "SelectionPolicy"
#define XmCSeparatorOn "SeparatorOn"
#define XmCSeparatorType "SeparatorType"
#define XmCSet "Set"
#define XmCShadowThickness "ShadowThickness"
#define XmCShadowType "ShadowType"
#define XmCShellUnitType "ShellUnitType"
#define XmCShowArrows "ShowArrows"
#define XmCShowAsDefault "ShowAsDefault"
#define XmCShowSeparator "ShowSeparator"
#define XmCShowValue "ShowValue"
#define XmCSimpleCheckBox "SimpleCheckBox"
#define XmCSimpleMenuBar "SimpleMenuBar"
#define XmCSimpleOptionMenu "SimpleOptionMenu"
#define XmCSimplePopupMenu "SimplePopupMenu"
#define XmCSimplePulldownMenu "SimplePulldownMenu"

```

```
#define XmCSimpleRadioBox "SimpleRadioBox"
#define XmCSizePolicy "SizePolicy"
#define XmCSliderSize "SliderSize"
#define XmCSource "Source"
#define XmCSourceCursorIcon "SourceCursorIcon"
#define XmCSourceIsExternal "SourceIsExternal"
#define XmCSourcePixmapIcon "SourcePixmapIcon"
#define XmCSourceWidget "SourceWidget"
#define XmCSourceWindow "SourceWindow"
#define XmCSpacing "Spacing"
#define XmCStartTime "StartTime"
#define XmCStateCursorIcon "StateCursorIcon"
#define XmCStringDirection "StringDirection"
#define XmCTearOffModel "TearOffModel"
#define XmCTextFontList "TextFontList"
#define XmCTextString "TextString"
#define XmCTextValue "TextValue"
#define XmCTitleString "TitleString"
#define XmCTopCharacter "TopCharacter"
#define XmCTopItemPosition "TopItemPosition"
#define XmCTopLevelEnterCallback "TopLevelEnterCallback"
#define XmCTopLevelLeaveCallback "TopLevelLeaveCallback"
#define XmCTopShadowColor "TopShadowColor"
#define XmCTopShadowPixmap "TopShadowPixmap"
#define XmCTransferProc "TransferProc"
#define XmCTransferStatus "TransferStatus"
#define XmCTraversalOn "TraversalOn"
#define XmCTraversalType "TraversalType"
#define XmCTreeUpdateProc "TreeUpdateProc"
#define XmCTroughColor "TroughColor"
#define XmCUnitType "UnitType"
#define XmCUnpostBehavior "UnpostBehavior"
#define XmCUnselectPixmap "UnselectPixmap"
#define XmCUpdatesSliderSize "UpdatesSliderSize"
#define XmCUseAsyncGeometry "UseAsyncGeometry"
#define XmCUserData "UserData"
#define XmCValidCursorForeground "ValidCursorForeground"
#define XmCValueChangedCallback "ValueChangedCallback"
#define XmCValueWcs "ValueWcs"
#define XmCVerifyBell "VerifyBell"
#define XmCVerticalAlignment "VerticalAlignment"
#define XmCVerticalFontUnit "VerticalFontUnit"
#define XmCVerticalScrollBar "VerticalScrollBar"
#define XmCVisibleItemCount "VisibleItemCount"
#define XmCVisibleWhenOff "VisibleWhenOff"
#define XmCVisualPolicy "VisualPolicy"
#define XmCWhichButton "WhichButton"
#define XmCWordWrap "WordWrap"
#define XmCWorkWindow "WorkWindow"
#define XmCXmString "XmString"
#define XmNaccelerator "accelerator"
#define XmNacceleratorText "acceleratorText"
#define XmNactivateCallback "activateCallback"
#define XmNadjustLast "adjustLast"
#define XmNadjustMargin "adjustMargin"
#define XmNalignment "alignment"
#define XmNallowOverlap "allowOverlap"
#define XmNallowResize "allowResize"
#define XmNanimationMask "animationMask"
#define XmNanimationPixmap "animationPixmap"
#define XmNanimationPixmapDepth "animationPixmapDepth"
#define XmNanimationStyle "animationStyle"
#define XmNapplyCallback "applyCallback"
#define XmNapplyLabelString "applyLabelString"
#define XmNarmCallback "armCallback"
```

```

#define XmNarmColor "armColor"
#define XmNarmPixmap "armPixmap"
#define XmNarrowDirection "arrowDirection"
#define XmNattachment "attachment"
#define XmNaudibleWarning "audibleWarning"
#define XmNautoShowCursorPosition "autoShowCursorPosition"
#define XmNautoUnmanage "autoUnmanage"
#define XmNautomaticSelection "automaticSelection"
#define XmNavailability "availability"
#define XmNblendModel "blendModel"
#define XmNblinkRate "blinkRate"
#define XmNbottomAttachment "bottomAttachment"
#define XmNbottomOffset "bottomOffset"
#define XmNbottomPosition "bottomPosition"
#define XmNbottomShadowColor "bottomShadowColor"
#define XmNbottomShadowPixmap "bottomShadowPixmap"
#define XmNbottomWidget "bottomWidget"
#define XmNbrowseSelectionCallback "browseSelectionCallback"
#define XmNbuttonAcceleratorText "buttonAcceleratorText"
#define XmNbuttonAccelerators "buttonAccelerators"
#define XmNbuttonCount "buttonCount"
#define XmNbuttonFontList "buttonFontList"
#define XmNbuttonMnemonicCharSets "buttonMnemonicCharSets"
#define XmNbuttonMnemonics "buttonMnemonics"
#define XmNbuttonSet "buttonSet"
#define XmNbuttonType "buttonType"
#define XmNbuttons "buttons"
#define XmNcancelButton "cancelButton"
#define XmNcancelCallback "cancelCallback"
#define XmNcancelLabelString "cancelLabelString"
#define XmNcascadePixmap "cascadePixmap"
#define XmNcascadingCallback "cascadingCallback"
#define XmNchildHorizontalAlignment "childHorizontalAlignment"
#define XmNchildHorizontalSpacing "childHorizontalSpacing"
#define XmNchildPlacement "childPlacement"
#define XmNchildPosition "childPosition"
#define XmNchildType "childType"
#define XmNchildVerticalAlignment "childVerticalAlignment"
#define XmNclientData "clientData"
#define XmNclipWindow "clipWindow"
#define XmNcolumns "columns"
#define XmNcommand "command"
#define XmNcommandChangedCallback "commandChangedCallback"
#define XmNcommandEnteredCallback "commandEnteredCallback"
#define XmNcommandWindow "commandWindow"
#define XmNcommandWindowLocation "commandWindowLocation"
#define XmNconvertProc "convertProc"
#define XmNcursorBackground "cursorBackground"
#define XmNcursorForeground "cursorForeground"
#define XmNcursorPosition "cursorPosition"
#define XmNcursorPositionVisible "cursorPositionVisible"
#define XmNdarkThreshold "darkThreshold"
#define XmNdecimalPoints "decimalPoints"
#define XmNdecrementCallback "decrementCallback"
#define XmNdefaultActionCallback "defaultActionCallback"
#define XmNdefaultButton "defaultButton"
#define XmNdefaultButtonShadowThickness "defaultButtonShadowThickness"
#define XmNdefaultButtonType "defaultButtonType"
#define XmNdefaultCopyCursorIcon "defaultCopyCursorIcon"
#define XmNdefaultFontList "defaultFontList"
#define XmNdefaultInvalidCursorIcon "defaultInvalidCursorIcon"
#define XmNdefaultLinkCursorIcon "defaultLinkCursorIcon"
#define XmNdefaultMoveCursorIcon "defaultMoveCursorIcon"
#define XmNdefaultNoneCursorIcon "defaultNoneCursorIcon"
#define XmNdefaultPosition "defaultPosition"

```

```
#define XmNdefaultSourceCursorIcon "defaultSourceCursorIcon"
#define XmNdefaultValidCursorIcon "defaultValidCursorIcon"
#define XmNdeleteResponse "deleteResponse"
#define XmNdesktopParent "desktopParent"
#define XmNdialogStyle "dialogStyle"
#define XmNdialogTitle "dialogTitle"
#define XmNdialogType "dialogType"
#define XmNdirListItemCount "dirListItemCount"
#define XmNdirListItems "dirListItems"
#define XmNdirListLabelString "dirListLabelString"
#define XmNdirMask "dirMask"
#define XmNdirSearchProc "dirSearchProc"
#define XmNdirSpec "dirSpec"
#define XmNdirectory "directory"
#define XmNdirectoryValid "directoryValid"
#define XmNdisarmCallback "disarmCallback"
#define XmNdoubleClickInterval "doubleClickInterval"
#define XmNdragCallback "dragCallback"
#define XmNdragContextClass "dragContextClass"
#define XmNdragDropFinishCallback "dragDropFinishCallback"
#define XmNdragIconClass "dragIconClass"
#define XmNdragInitiatorProtocolStyle "dragInitiatorProtocolStyle"
#define XmNdragMotionCallback "dragMotionCallback"
#define XmNdragOperations "dragOperations"
#define XmNdragOverMode "dragOverMode"
#define XmNdragProc "dragProc"
#define XmNdragReceiverProtocolStyle "dragReceiverProtocolStyle"
#define XmNdropFinishCallback "dropFinishCallback"
#define XmNdropProc "dropProc"
#define XmNdropRectangles "dropRectangles"
#define XmNdropSiteActivity "dropSiteActivity"
#define XmNdropSiteEnterCallback "dropSiteEnterCallback"
#define XmNdropSiteLeaveCallback "dropSiteLeaveCallback"
#define XmNdropSiteManagerClass "dropSiteManagerClass"
#define XmNdropSiteOperations "dropSiteOperations"
#define XmNdropSiteType "dropSiteType"
#define XmNdropStartCallback "dropStartCallback"
#define XmNdropTransferClass "dropTransferClass"
#define XmNdropTransfers "dropTransfers"
#define XmNeditMode "editMode"
#define XmNeditable "editable"
#define XmNentryAlignment "entryAlignment"
#define XmNentryBorder "entryBorder"
#define XmNentryCallback "entryCallback"
#define XmNentryClass "entryClass"
#define XmNentryVerticalAlignment "entryVerticalAlignment"
#define XmNexportTargets "exportTargets"
#define XmNexposeCallback "exposeCallback"
#define XmNextendedSelectionCallback "extendedSelectionCallback"
#define XmNextensionType "extensionType"
#define XmNfileListItemCount "fileListItemCount"
#define XmNfileListItems "fileListItems"
#define XmNfileListLabelString "fileListLabelString"
#define XmNfileSearchProc "fileSearchProc"
#define XmNfileTypeMask "fileTypeMask"
#define XmNfillOnArm "fillOnArm"
#define XmNfillOnSelect "fillOnSelect"
#define XmNfilterLabelString "filterLabelString"
#define XmNfocusCallback "focusCallback"
#define XmNfocusMovedCallback "focusMovedCallback"
#define XmNfocusPolicyChanged "focusPolicyChanged"
#define XmNfontList "fontList"
#define XmNforegroundThreshold "foregroundThreshold"
#define XmNfractionBase "fractionBase"
#define XmNgainPrimaryCallback "gainPrimaryCallback"
```

```

#define XmNhelpCallback "helpCallback"
#define XmNhelpLabelString "helpLabelString"
#define XmNhighlightColor "highlightColor"
#define XmNhighlightOnEnter "highlightOnEnter"
#define XmNhighlightPixmap "highlightPixmap"
#define XmNhighlightThickness "highlightThickness"
#define XmNhistoryItemCount "historyItemCount"
#define XmNhistoryItems "historyItems"
#define XmNhistoryMaxItems "historyMaxItems"
#define XmNhistoryVisibleItemCount "historyVisibleItemCount"
#define XmNhorizontalFontUnit "horizontalFontUnit"
#define XmNhorizontalScrollBar "horizontalScrollBar"
#define XmNhorizontalSpacing "horizontalSpacing"
#define XmNhotX "hotX"
#define XmNhotY "hotY"
#define XmNiccHandle "iccHandle"
#define XmNimportTargets "importTargets"
#define XmNincrement "increment"
#define XmNincrementCallback "incrementCallback"
#define XmNincremental "incremental"
#define XmNindicatorOn "indicatorOn"
#define XmNindicatorSize "indicatorSize"
#define XmNindicatorType "indicatorType"
#define XmNinitialDelay "initialDelay"
#define XmNinitialFocus "initialFocus"
#define XmNinputCallback "inputCallback"
#define XmNinputCreate "inputCreate"
#define XmNinputMethod "inputMethod"
#define XmNinvalidCursorForeground "invalidCursorForeground"
#define XmNisAligned "isAligned"
#define XmNisHomogeneous "isHomogeneous"
#define XmNitemCount "itemCount"
#define XmNitems "items"
#define XmNkeyboardFocusPolicy "keyboardFocusPolicy"
#define XmNlabelFontList "labelFontList"
#define XmNlabelInsensitivePixmap "labelInsensitivePixmap"
#define XmNlabelPixmap "labelPixmap"
#define XmNlabelString "labelString"
#define XmNlabelType "labelType"
#define XmNleftAttachment "leftAttachment"
#define XmNleftOffset "leftOffset"
#define XmNleftPosition "leftPosition"
#define XmNleftWidget "leftWidget"
#define XmNlightThreshold "lightThreshold"
#define XmNlineSpace "lineSpace"
#define XmNlistItemCount "listItemCount"
#define XmNlistItems "listItems"
#define XmNlistLabelString "listLabelString"
#define XmNlistMarginHeight "listMarginHeight"
#define XmNlistMarginWidth "listMarginWidth"
#define XmNlistSizePolicy "listSizePolicy"
#define XmNlistSpacing "listSpacing"
#define XmNlistUpdated "listUpdated"
#define XmNlistVisibleItemCount "listVisibleItemCount"
#define XmNlogicalParent "logicalParent"
#define XmNlosePrimaryCallback "losePrimaryCallback"
#define XmNlosingFocusCallback "losingFocusCallback"
#define XmNmainWindowMarginHeight "mainWindowMarginHeight"
#define XmNmainWindowMarginWidth "mainWindowMarginWidth"
#define XmNmapCallback "mapCallback"
#define XmNmappingDelay "mappingDelay"
#define XmNmargin "margin"
#define XmNmarginBottom "marginBottom"
#define XmNmarginHeight "marginHeight"
#define XmNmarginLeft "marginLeft"

```

```
#define XmNmarginRight "marginRight"
#define XmNmarginTop "marginTop"
#define XmNmarginWidth "marginWidth"
#define XmNmask "mask"
#define XmNmaxLength "maxLength"
#define XmNmaximum "maximum"
#define XmNmenuAccelerator "menuAccelerator"
#define XmNmenuBar "menuBar"
#define XmNmenuCursor "menuCursor"
#define XmNmenuHelpWidget "menuHelpWidget"
#define XmNmenuHistory "menuHistory"
#define XmNmenuPost "menuPost"
#define XmNmessageAlignment "messageAlignment"
#define XmNmessageProc "messageProc"
#define XmNmessageString "messageString"
#define XmNmessageWindow "messageWindow"
#define XmNminimizeButtons "minimizeButtons"
#define XmNminimum "minimum"
#define XmNmnemonic "mnemonic"
#define XmNmnemonicCharSet "mnemonicCharSet"
#define XmNmodifyVerifyCallback "modifyVerifyCallback"
#define XmNmodifyVerifyCallbackWcs "modifyVerifyCallbackWcs"
#define XmNmotionVerifyCallback "motionVerifyCallback"
#define XmNmoveOpaque "moveOpaque"
#define XmNmultiClick "multiClick"
#define XmNmultipleSelectionCallback "multipleSelectionCallback"
#define XmNmustMatch "mustMatch"
#define XmNmwmDecorations "mwmDecorations"
#define XmNmwmFunctions "mwmFunctions"
#define XmNmwmInputMode "mwmInputMode"
#define XmNmwmMenu "mwmMenu"
#define XmNmwmMessages "mwmMessages"
#define XmNnavigationType "navigationType"
#define XmNneedsMotion "needsMotion"
#define XmNnoMatchCallback "noMatchCallback"
#define XmNnoMatchString "noMatchString"
#define XmNnoResize "noResize"
#define XmNnoneCursorForeground "noneCursorForeground"
#define XmNnotifyProc "notifyProc"
#define XmNnumColumns "numColumns"
#define XmNnumDropRectangles "numDropRectangles"
#define XmNnumDropTransfers "numDropTransfers"
#define XmNnumExportTargets "numExportTargets"
#define XmNnumImportTargets "numImportTargets"
#define XmNnumRectangles "numRectangles"
#define XmNoffsetX "offsetX"
#define XmNoffsetY "offsetY"
#define XmNokCallback "okCallback"
#define XmNokLabelString "okLabelString"
#define XmNoperationChangedCallback "operationChangedCallback"
#define XmNoperationCursorIcon "operationCursorIcon"
#define XmNoptionLabel "optionLabel"
#define XmNoptionMnemonic "optionMnemonic"
#define XmNoutputCreate "outputCreate"
#define XmNpacking "packing"
#define XmNpageDecrementCallback "pageDecrementCallback"
#define XmNpageIncrement "pageIncrement"
#define XmNpageIncrementCallback "pageIncrementCallback"
#define XmNpaneMaximum "paneMaximum"
#define XmNpaneMinimum "paneMinimum"
#define XmNpattern "pattern"
#define XmNpendingDelete "pendingDelete"
#define XmNpopupEnabled "popupEnabled"
#define XmNpositionIndex "positionIndex"
#define XmNpostFromButton "postFromButton"
```

```

#define XmNpostFromCount "postFromCount"
#define XmNpostFromList "postFromList"
#define XmNpreeditType "preeditType"
#define XmNprocessingDirection "processingDirection"
#define XmNpromptString "promptString"
#define XmNprotocolCallback "protocolCallback"
#define XmNpushButtonEnabled "pushButtonEnabled"
#define XmNqualifySearchDataProc "qualifySearchDataProc"
#define XmNradioAlwaysOne "radioAlwaysOne"
#define XmNradioBehavior "radioBehavior"
#define XmNrealizeCallback "realizeCallback"
#define XmNrecomputeSize "recomputeSize"
#define XmNrectangles "rectangles"
#define XmNrefigureMode "refigureMode"
#define XmNrepeatDelay "repeatDelay"
#define XmNresizable "resizable"
#define XmNresizeCallback "resizeCallback"
#define XmNresizeHeight "resizeHeight"
#define XmNresizePolicy "resizePolicy"
#define XmNresizeWidth "resizeWidth"
#define XmNrightAttachment "rightAttachment"
#define XmNrightOffset "rightOffset"
#define XmNrightPosition "rightPosition"
#define XmNrightWidget "rightWidget"
#define XmNrowColumnType "rowColumnType"
#define XmNrows "rows"
#define XmNrubberPositioning "rubberPositioning"
#define XmNsashHeight "sashHeight"
#define XmNsashIndent "sashIndent"
#define XmNsashShadowThickness "sashShadowThickness"
#define XmNsashWidth "sashWidth"
#define XmNscaleHeight "scaleHeight"
#define XmNscaleMultiple "scaleMultiple"
#define XmNscaleWidth "scaleWidth"
#define XmNscrollBarDisplayPolicy "scrollBarDisplayPolicy"
#define XmNscrollBarPlacement "scrollBarPlacement"
#define XmNscrollHorizontal "scrollHorizontal"
#define XmNscrollLeftSide "scrollLeftSide"
#define XmNscrollTopSide "scrollTopSide"
#define XmNscrollVertical "scrollVertical"
#define XmNscrolledWindowMarginHeight "scrolledWindowMarginHeight"
#define XmNscrolledWindowMarginWidth "scrolledWindowMarginWidth"
#define XmNscrollingPolicy "scrollingPolicy"
#define XmNselectColor "selectColor"
#define XmNselectInsensitivePixmap "selectInsensitivePixmap"
#define XmNselectPixmap "selectPixmap"
#define XmNselectThreshold "selectThreshold"
#define XmNselectedItemCount "selectedItemCount"
#define XmNselectedItems "selectedItems"
#define XmNselectionArrayCount "selectionArrayCount"
#define XmNselectionLabelString "selectionLabelString"
#define XmNselectionPolicy "selectionPolicy"
#define XmNseparatorOn "separatorOn"
#define XmNseparatorType "separatorType"
#define XmNset "set"
#define XmNshadow "shadow"
#define XmNshadowThickness "shadowThickness"
#define XmNshadowType "shadowType"
#define XmNshellUnitType "shellUnitType"
#define XmNshowArrows "showArrows"
#define XmNshowAsDefault "showAsDefault"
#define XmNshowSeparator "showSeparator"
#define XmNshowValue "showValue"
#define XmNsimpleCallback "simpleCallback"
#define XmNsingleSelectionCallback "singleSelectionCallback"

```

```
#define XmNsizePolicy "sizePolicy"
#define XmNskipAdjust "skipAdjust"
#define XmNsliderSize "sliderSize"
#define XmNsource "source"
#define XmNsourceCursorIcon "sourceCursorIcon"
#define XmNsourceIsExternal "sourceIsExternal"
#define XmNsourcePixmapIcon "sourcePixmapIcon"
#define XmNsourceWidget "sourceWidget"
#define XmNsourceWindow "sourceWindow"
#define XmNspacing "spacing"
#define XmNspotLocation "spotLocation"
#define XmNstartTime "startTime"
#define XmNstateCursorIcon "stateCursorIcon"
#define XmNstringDirection "stringDirection"
#define XmNsubMenuId "subMenuId"
#define XmNsymbolPixmap "symbolPixmap"
#define XmNtearOffMenuActivateCallback "tearOffMenuActivateCallback"
#define XmNtearOffMenuDeactivateCallback "tearOffMenuDeactivateCallback"
#define XmNtearOffModel "tearOffModel"
#define XmNtextAccelerators "textAccelerators"
#define XmNtextColumns "textColumns"
#define XmNtextFontList "textFontList"
#define XmNtextString "textString"
#define XmNtextTranslations "textTranslations"
#define XmNtextValue "textValue"
#define XmNtitleString "titleString"
#define XmNtoBottomCallback "toBottomCallback"
#define XmNtoPositionCallback "toPositionCallback"
#define XmNtoTopCallback "toTopCallback"
#define XmNtopAttachment "topAttachment"
#define XmNtopCharacter "topCharacter"
#define XmNtopItemPosition "topItemPosition"
#define XmNtopLevelEnterCallback "topLevelEnterCallback"
#define XmNtopLevelLeaveCallback "topLevelLeaveCallback"
#define XmNtopOffset "topOffset"
#define XmNtopPosition "topPosition"
#define XmNtopShadowColor "topShadowColor"
#define XmNtopShadowPixmap "topShadowPixmap"
#define XmNtopWidget "topWidget"
#define XmNtransferProc "transferProc"
#define XmNtransferStatus "transferStatus"
#define XmNtraversalCallback "traversalCallback"
#define XmNtraversalOn "traversalOn"
#define XmNtraversalType "traversalType"
#define XmNtraverseObscuredCallback "traverseObscuredCallback"
#define XmNtreeUpdateProc "treeUpdateProc"
#define XmNtroughColor "troughColor"
#define XmNunitType "unitType"
#define XmNunmapCallback "unmapCallback"
#define XmNunpostBehavior "unpostBehavior"
#define XmNunselectPixmap "unselectPixmap"
#define XmNupdateSliderSize "updateSliderSize"
#define XmNuseAsyncGeometry "useAsyncGeometry"
#define XmNuserData "userData"
#define XmNvalidCursorForeground "validCursorForeground"
#define XmNvalueChangedCallback "valueChangedCallback"
#define XmNvalueWcs "valueWcs"
#define XmNverifyBell "verifyBell"
#define XmNverticalFontUnit "verticalFontUnit"
#define XmNverticalScrollBar "verticalScrollBar"
#define XmNverticalSpacing "verticalSpacing"
#define XmNvisibleItemCount "visibleItemCount"
#define XmNvisibleWhenOff "visibleWhenOff"
#define XmNvisualPolicy "visualPolicy"
#define XmNwhichButton "whichButton"
```



```

#define XmNwordWrap "wordWrap"
#define XmNworkWindow "workWindow"
#define XmRAlignment "Alignment"
#define XmRAnimationMask "AnimationMask"
#define XmRAnimationPixmap "AnimationPixmap"
#define XmRAnimationStyle "AnimationStyle"
#define XmRArrowDirection "ArrowDirection"
#define XmRAtomList "AtomList"
#define XmRAttachment "Attachment"
#define XmRAudibleWarning "AudibleWarning"
#define XmRAvailability "Availability"
#define XmRBackgroundPixmap "BackgroundPixmap"
#define XmRBlendModel "BlendModel"
#define XmRBooleanDimension "BooleanDimension"
#define XmRBottomShadowPixmap "BottomShadowPixmap"
#define XmRButtonType "ButtonType"
#define XmRCallbackProc "CallbackProc"
#define XmRChar "Char"
#define XmRCharSetTable "CharSetTable"
#define XmRChildHorizontalAlignment "ChildHorizontalAlignment"
#define XmRChildPlacement "ChildPlacement"
#define XmRChildType "ChildType"
#define XmRChildVerticalAlignment "ChildVerticalAlignment"
#define XmRCommandWindowLocation "CommandWindowLocation"
#define XmRCompoundText "CompoundText"
#define XmRDefaultButtonType "DefaultButtonType"
#define XmRDeleteResponse "DeleteResponse"
#define XmRDialogStyle "DialogStyle"
#define XmRDialogType "DialogType"
#define XmRDoubleClickInterval "DoubleClickInterval"
#define XmRDragInitiatorProtocolStyle "DragInitiatorProtocolStyle"
#define XmRDragReceiverProtocolStyle "DragReceiverProtocolStyle"
#define XmRDropSiteActivity "DropSiteActivity"
#define XmRDropSiteOperations "DropSiteOperations"
#define XmRDropSiteType "DropSiteType"
#define XmRDropTransfers "DropTransfers"
#define XmRExtensionType "ExtensionType"
#define XmRFileTypeMask "FileTypeMask"
#define XmRFontList "FontList"
#define XmRGadgetPixmap "GadgetPixmap"
#define XmRHighlightPixmap "HighlightPixmap"
#define XmRHorizontalDimension "HorizontalDimension"
#define XmRHorizontalInt "HorizontalInt"
#define XmRHorizontalPosition "HorizontalPosition"
#define XmRIconAttachment "IconAttachment"
#define XmRImportTargets "ImportTargets"
#define XmRIndicatorType "IndicatorType"
#define XmRItemCount "ItemCount"
#define XmRItems "Items"
#define XmRKeySym "KeySym"
#define XmRKeySymTable "KeySymTable"
#define XmRKeyboardFocusPolicy "KeyboardFocusPolicy"
#define XmRLabelType "LabelType"
#define XmRListMarginHeight "ListMarginHeight"
#define XmRListMarginWidth "ListMarginWidth"
#define XmRListSizePolicy "ListSizePolicy"
#define XmRListSpacing "ListSpacing"
#define XmRManBottomShadowPixmap "ManBottomShadowPixmap"
#define XmRManForegroundPixmap "ManForegroundPixmap"
#define XmRManHighlightPixmap "ManHighlightPixmap"
#define XmRManTopShadowPixmap "ManTopShadowPixmap"
#define XmRMenuWidget "MenuWidget"
#define XmRMnemonic "Mnemonic"
#define XmRMultiClick "MultiClick"
#define XmRNavigationType "NavigationType"

```

```
#define XmRPacking "Packing"
#define XmRPrimForegroundPixmap "PrimForegroundPixmap"
#define XmRProc "Proc"
#define XmRProcessingDirection "ProcessingDirection"
#define XmRRectangleList "RectangleList"
#define XmRResizePolicy "ResizePolicy"
#define XmRRowColumnType "RowColumnType"
#define XmRScrollBarDisplayPolicy "ScrollBarDisplayPolicy"
#define XmRScrollBarPlacement "ScrollBarPlacement"
#define XmRScrollingPolicy "ScrollingPolicy"
#define XmRSelectedItemCount "SelectedItemCount"
#define XmRSelectedItems "SelectedItems"
#define XmRSelectionPolicy "SelectionPolicy"
#define XmRSelectionType "SelectionType"
#define XmRSeparatorType "SeparatorType"
#define XmRShadowType "ShadowType"
#define XmRShellHorizDim "ShellHorizDim"
#define XmRShellHorizPos "ShellHorizPos"
#define XmRShellUnitType "ShellUnitType"
#define XmRShellVertDim "ShellVertDim"
#define XmRShellVertPos "ShellVertPos"
#define XmRSizePolicy "SizePolicy"
#define XmRStringDirection "StringDirection"
#define XmRTearOffModel "TearOffModel"
#define XmRTopShadowPixmap "TopShadowPixmap"
#define XmRTransferStatus "TransferStatus"
#define XmRTraversalType "TraversalType"
#define XmRUnitType "UnitType"
#define XmRUNpostBehavior "UnpostBehavior"
#define XmRValueWcs "ValueWcs"
#define XmRVerticalAlignment "VerticalAlignment"
#define XmRVerticalDimension "VerticalDimension"
#define XmRVerticalInt "VerticalInt"
#define XmRVerticalPosition "VerticalPosition"
#define XmRVirtualBinding "VirtualBinding"
#define XmRVisibleItemCount "VisibleItemCount"
#define XmRVisualPolicy "VisualPolicy"
#define XmRWhichButton "WhichButton"
#define XmRXmBackgroundPixmap "XmBackgroundPixmap"
#define XmRXmString "XmString"
#define XmRXmStringCharSet "XmStringCharSet"
#define XmRXmStringTable "XmStringTable"
#define XmVosfActivate "osfActivate"
#define XmVosfAddMode "osfAddMode"
#define XmVosfBackSpace "osfBackSpace"
#define XmVosfBeginLine "osfBeginLine"
#define XmVosfCancel "osfCancel"
#define XmVosfClear "osfClear"
#define XmVosfCopy "osfCopy"
#define XmVosfCut "osfCut"
#define XmVosfDelete "osfDelete"
#define XmVosfDown "osfDown"
#define XmVosfEndLine "osfEndLine"
#define XmVosfHelp "osfHelp"
#define XmVosfInsert "osfInsert"
#define XmVosfLeft "osfLeft"
#define XmVosfMenu "osfMenu"
#define XmVosfMenuBar "osfMenuBar"
#define XmVosfPageDown "osfPageDown"
#define XmVosfPageLeft "osfPageLeft"
#define XmVosfPageRight "osfPageRight"
#define XmVosfPageUp "osfPageUp"
#define XmVosfPaste "osfPaste"
#define XmVosfPrimaryPaste "osfPrimaryPaste"
#define XmVosfQuickPaste "osfQuickPaste"
```

```

#define XmVosfRight "osfRight"
#define XmVosfSelect "osfSelect"
#define XmVosfUndo "osfUndo"
#define XmVosfUp "osfUp"
#define XmSFONTLIST_DEFAULT_TAG_STRING "FONTLIST_DEFAULT_TAG_STRING"
#define XmSXmFONTLIST_DEFAULT_TAG_STRING "XmFONTLIST_DEFAULT_TAG_STRING"
#define _XmConst /**/

#define XmSTRING_DEFAULT_CHARSET XmS
#define XmSTRING_ISO8859_1 "ISO8859-1"
#define XmFONTLIST_DEFAULT_TAG XmSFONTLIST_DEFAULT_TAG_STRING
#define XmSXmFONTLIST_DEFAULT_TAG_STRING XmSXmFONTLIST_DEFAULT_TAG_STRING

#define XmVaCASCADEBUTTON "cascadeButton"
#define XmVaCHECKBUTTON "checkButton"
#define XmVaDOUBLE_SEPARATOR "doubleSeparator"
#define XmVaPUSHBUTTON "pushButton"
#define XmVaRADIOBUTTON "radioButton"
#define XmVaSEPARATOR "separator"
#define XmVaSINGLE_SEPARATOR "singleSeparator"
#define XmVaTOGGLEBUTTON "checkButton"
#define XmVaTITLE XtNtitle

#define XtCKeyboardFocusPolicy XmCKeyboardFocusPolicy
#define XtCShellUnitType XmCShellUnitType
#define XtNKeyboardFocusPolicy XmNKeyboardFocusPolicy
#define XtNshellUnitType XmNshellUnitType
#define XtRKeyboardFocusPolicy XmRKeyboardFocusPolicy

#define XmRPrimBottomShadowPixmap XmRBottomShadowPixmap
#define XmRPrimHighlightPixmap XmRHighlightPixmap
#define XmRPrimTopShadowPixmap XmRTopShadowPixmap

#define XmCAccelerators XtCAccelerators
#define XmCAllowShellResize XtCAllowShellResize
#define XmCArgc XtCArgc
#define XmCArgv XtCArgv
#define XmCBackground XtCBackground
#define XmCBaseHeight XtCBaseHeight
#define XmCBaseHeight XtCBaseHeight
#define XmCBaseWidth XtCBaseWidth
#define XmCBaseWidth XtCBaseWidth
#define XmCBitmap XtCBitmap
#define XmCBoolean XtCBoolean
#define XmCBorderColor XtCBorderColor
#define XmCBorderWidth XtCBorderWidth
#define XmCCallback XtCCallback
#define XmCColor XtCColor
#define XmCColormap XtCColormap
#define XmCCreatePopupChildProc XtCCreatePopupChildProc
#define XmCCursor XtCCursor
#define XmCDepth XtCDepth
#define XmCDimension XtRDimension
#define XmCEditMode XtREditMode
#define XmCEditType XtCEditType
#define XmCEventBindings XtCEventBindings
#define XmCFile XtCFile
#define XmCFont XtCFont
#define XmCFontSet XtCFontSet
#define XmCForeground XtCForeground
#define XmCFraction XtCFraction
#define XmCFunction XtCFunction
#define XmCGeometry XtCGeometry
#define XmCHSpace XtCHSpace
#define XmCHeight XtCHeight

```

#define XmCHeightInc	XtCHeightInc
#define XmCIconMask	XtCIconMask
#define XmCIconName	XtCIconName
#define XmCIconNameEncoding	XtCIconNameEncoding
#define XmCIconPixmap	XtCIconPixmap
#define XmCIconWindow	XtCIconWindow
#define XmCIconX	XtCIconX
#define XmCIconY	XtCIconY
#define XmCIconic	XtCIconic
#define XmCIndex	XtCIndex
#define XmCInitialResourcesPersistent	XtCInitialResourcesPersistent
#define XmCInitialState	XtCInitialState
#define XmCInput	XtCInput
#define XmCInsertPosition	XtCInsertPosition
#define XmCInterval	XtCInterval
#define XmCJustify	XtCJustify
#define XmCLabel	XtCLabel
#define XmCLength	XtCLength
#define XmCMappedWhenManaged	XtCMappedWhenManaged
#define XmCMargin	XtCMargin
#define XmCMaxAspectX	XtCMaxAspectX
#define XmCMaxAspectY	XtCMaxAspectY
#define XmCMaxHeight	XtCMaxHeight
#define XmCMaxWidth	XtCMaxWidth
#define XmCMenuEntry	XtCMenuEntry
#define XmCMinAspectX	XtCMinAspectX
#define XmCMinAspectY	XtCMinAspectY
#define XmCMinHeight	XtCMinHeight
#define XmCMinWidth	XtCMinWidth
#define XmCNotify	XtCNotify
#define XmCOrientation	XtCOrientation
#define XmCOverrideRedirect	XtCOverrideRedirect
#define XmCParameter	XtCParameter
#define XmCPixmap	XtCPixmap
#define XmCPosition	XtCPosition
#define XmCReadOnly	XtCReadOnly
#define XmCResize	XtCResize
#define XmCReverseVideo	XtCReverseVideo
#define XmCSaveUnder	XtCSaveUnder
#define XmCScreen	XtCScreen
#define XmCScrollDCursor	XtCScrollDCursor
#define XmCScrollHCursor	XtCScrollHCursor
#define XmCScrollLCursor	XtCScrollLCursor
#define XmCScrollProc	XtCScrollProc
#define XmCScrollRCursor	XtCScrollRCursor
#define XmCScrollUCursor	XtCScrollUCursor
#define XmCScrollVCursor	XtCScrollVCursor
#define XmCSelection	XtCSelection
#define XmCSelectionArray	XtCSelectionArray
#define XmCSensitive	XtCSensitive
#define XmCSpace	XtCSpace
#define XmCString	XtCString
#define XmCTextOptions	XtCTextOptions
#define XmCTextPosition	XtCTextPosition
#define XmCTextSink	XtCTextSink
#define XmCTextSource	XtCTextSource
#define XmCThickness	XtCThickness
#define XmCThumb	XtCThumb
#define XmCTitle	XtCTitle
#define XmCTitleEncoding	XtCTitleEncoding
#define XmCTransient	XtCTransient
#define XmCTransientFor	XtCTransientFor
#define XmCTranslations	XtCTranslations
#define XmCVSpace	XtCVSpace
#define XmCValue	XtCValue

#define XmCVisual	XtCVisual
#define XmCWaitForWm	XtCWaitForWm
#define XmCWidget	XtRWidget
#define XmCWidth	XtCWidth
#define XmCWidthInc	XtCWidthInc
#define XmCWinGravity	XtCWinGravity
#define XmCWindow	XtCWindow
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CHAPTER 11: Development Environments

SCD
2.3

Development Environments

Overview

This chapter contains the commands for application programs as listed in the *System V Application Binary Interface (Third Edition)*, and described in the *System V Interface Definition, (Third Edition)*

Table 11-1. Software Packaging tools

pkgproto	pkgtrans	pkgmk
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Development Environments Changes

#	Facility	Location	Description
1	Commands	gABI	Remove command section page 11-1, 11-2, 11-3: The SCD places no requirements on the nature of the development tools, if any, that are provided on a system. In particular, the six commands as, cc, ld, m4, lex, and yacc are not part of the SCD.

CHAPTER 12: Networking

SCD
2.3

Networking

All information regarding File System Structure and Contents may be found in Chapter 12 of the *System V Application Binary Interface (Third Edition)*.

Networking Changes

The following are changes to the *System V Application Binary Interface (Third Edition)*, the *System V Application Binary Interface - SPARC Processor Supplement (Third Edition)*, and the *System V Interface Definition (Third Edition)* as reported to SPARC International.

#	Facility	Location	Description
1	Required STREAMS Devices and Modules	gABI	Addition - To Figure 12-1 on page 12-2, add /dev/icmp and /dev/arp.

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