

XtMalloc, XtCalloc, XtRealloc, XtFree, XtNew, XtNewString – memory management functions

```
char *XtMalloc(size);  
    Cardinal size;  
char *XtCalloc(num, size);  
    Cardinal num;  
    Cardinal size;  
char *XtRealloc(ptr, num);  
    char *ptr;  
    Cardinal num;  
void XtFree(ptr);  
    char *ptr;  
type *XtNew(type);  
    type;  
String XtNewString(string);  
    String string;
```

num Specifies the number of bytes or array elements.
ptr Specifies a pointer to the old storage or to the block of storage that is to be freed.
size Specifies the size of an array element (in bytes) or the number of bytes desired.
string Specifies a previously declared string.
type Specifies a previously declared data type.

The **XtMalloc** functions returns a pointer to a block of storage of at least the specified size bytes. If there is insufficient memory to allocate the new block, **XtMalloc** calls **XtErrorMsg**.

The **XtCalloc** function allocates space for the specified number of array elements of the specified size and initializes the space to zero. If there is insufficient memory to allocate the new block, **XtCalloc** calls **XtErrorMsg**.

The **XtRealloc** function changes the size of a block of storage (possibly moving it). Then, it copies the old contents (or as much as will fit) into the new block and frees the old block. If there is insufficient memory to allocate the new block, **XtRealloc** calls **XtErrorMsg**. If *ptr* is NULL, **XtRealloc** allocates the new storage without copying the old contents; that is, it simply calls **XtMalloc**.

The **XtFree** function returns storage and allows it to be reused. If *ptr* is NULL, **XtFree** returns immediately.

XtNew returns a pointer to the allocated storage. If there is insufficient memory to allocate the new block, **XtNew** calls **XtErrorMsg**. **XtNew** is a convenience macro that calls **XtMalloc** with the following arguments specified:

```
((type *) XtMalloc((unsigned) sizeof(type))
```

XtNewString returns a pointer to the allocated storage. If there is insufficient memory to allocate the new block, **XtNewString** calls **XtErrorMsg**. **XtNewString** is a convenience macro that calls **XtMalloc** with the following arguments specified:

```
(strcpy(XtMalloc((unsigned) strlen(str) + 1), str))
```