

**Sprite**

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# Chapter 1

## Sprite

### 1.1 Sprite V1.00

PureBasic - Sprite library V1.00

'Sprites' are well known from game players. This is small pictures, sometimes called 'brushes', which can be displayed at any position on a screen. The sprites can move over graphics without destroy them, unlike other graphics operations which are destructive. PureBasic sprites are fully based on the 'Blitter', a very fast hardware chip which can move quickly tons of data. This library is very optimized and as a particularity: it works in parallel with the main CPU, the 680x0. So you can display some sprite and use the CPU to achieve other tasks like artificial intelligence. All these functions are 100% OS friendly and you can use it for any kind of programs.

Commands summary in alphabetical order:

- AddBlockSprite
- AddBufferedSprite
- AddSprite
- CreateSpriteBuffer
- CopySprite
- FlushSpriteBuffer
- FreeSprite
- FreeSpriteBuffer
- InitSprite
- LoadSprite
- LoadSprites
- ResetSpriteServer
- RestoreBackground
- SaveSprites
- SpriteDepth
- SpriteHandler
- SpriteHeight
- SpriteWidth
- StartSpriteServer
- StopSpriteServer
- UseSpriteBuffer
- WaitSpriteServer

Example:

```
Sprite example
```

## 1.2 addblocksprite

### SYNTAX

```
AddBlockSprite(#Sprite, x, y)
```

### COMMAND

Display the sprite at the specified position on the current sprite buffer. This function is the fastest way to display a sprite at the screen but has some limitations:

- + The sprite width must be a multiple of 16 (ie: 16, 32, 48, 64...)
- + The position 'x' must be a multiple of 16.
- + There is no transparent colour for this sprite.

Note: If another sprite is being displayed, the function add this sprite to the server queue list and return immediately. You can never assume that this sprite is effectively displayed when this function returns ! Use the command 'WaitSpriteServer()' if you want to be sure that this sprite is really displayed. See the 'StartSpriteServer()' description for more information about this asynchronous process.

## 1.3 addbufferedsprite

### SYNTAX

```
AddBufferedSprite(#Sprite, x, y)
```

### COMMAND

Display the sprite at the specified position on the current sprite buffer. Before displaying this sprite, the background which will be destroyed by the sprite is saved in the sprite buffer. You must allocate some memory to store the background data (this is done via 'CreateSpriteBuffer()'). The saved background can be restored later with the command 'RestoreBackground()'. The colour 0 of the sprite is considered as transparent. This command is not clipped, so be sure to display the sprite inside the BitMap.

Note: If another sprite is being displayed, the function adds this sprite to the server queue list and returns immediately. You can never assume that this sprite is effectively displayed when this function returns ! Use the command 'WaitSpriteServer()' if you want to be sure that this sprite is really displayed. See the 'StartSpriteServer()' description for more information about this asynchronous process.

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## 1.4 addsprite

### SYNTAX

```
AddSprite(#Sprite, x, y)
```

### COMMAND

Display the sprite at the specified position on the current sprite buffer. The background area is destroyed by this function. If you need to preserve the background, use 'AddBufferedSprite()' instead. The colour 0 of the sprite is considered as transparent. This command is not clipped, so be sure to display the sprite inside the BitMap.

Note: If another sprite is being displayed, the function add this sprite to the server queue list and return immediately. You can never assume than this sprite is effectively display when this function return ! Use the command 'WaitSpriteServer()' if you want to be sure than this sprite is really displayed. See the 'StartSpriteServer()' description for more informations about this asynchrone process.

## 1.5 createspritebuffer

### SYNTAX

```
CreateSpriteBuffer(#SpriteBuffer, Size, BitMapID)
```

### FUNCTION

Creates and initializes a new sprite buffer. 'BitMapID' is the identifiant of the bitmap on which you want to display the sprites. 'Size' is only useful when you display some sprites with the 'AddBufferedSprite()' command, when a background is saved. This 'Size' is function of the number of sprites displayed at the same time, their sizes, and of the bitmap depth. To calculate it, you can use the following rule:

$$\text{Size} = (\text{BitMapDepth} * (\text{SpriteWidth} * \text{SpriteHeight}) * \text{NumberOfSpriteDisplayed}) / 8 \leftarrow + 1000$$

This newly created sprite buffer becomes the current sprite buffer.

## 1.6 freesprite

### SYNTAX

```
FreeSprite(#Sprite)
```

### FUNCTION

Remove the specified sprite from memory. You can no more use it.

## 1.7 freespritebuffer

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## SYNTAX

```
FreeSpriteBuffer(#SpriteBuffer)
```

## FUNCTION

Free the specified sprite buffer and release all its allocated memory.

## 1.8 initsprite

## SYNTAX

```
Result = InitSpriteFile(#MaxSprites, #MaxDisplayedSprites, #MaxSpriteBuffers)
```

## FUNCTION

Init all the sprite environments for later use. You must put this function at the top of your source code if you want to use the sprite commands. You can test the result to see if the sprite environment has been correctly initialized. If not, quit the program or disable all the calls to the sprite related commands.

## 1.9 loadsprite

## SYNTAX

```
Result = LoadSprite(#Sprite, FileName$)
```

## STATEMENT

Load the specified sprite into the memory for immediate use. The sprite must be in IFF/ILBM format (compressed or not, both cases are supported). If something wrong happens, 0 is returned.

## 1.10 resetspriteserver

## SYNTAX

```
ResetSpriteServer()
```

## STATEMENT

Once you have finished to display all the needed sprites, you have to reset the sprite server to tell the system than all is fine. Internally, the sprite queue list is reseted to 0, so all non yet displayed sprites will be never displayed. Use the 'WaitSpriteServer()' function to be sure than the sprite server has finished. A good solution is to reset the sprite server at every frame (for a game of course).

## 1.11 restorebackground

## SYNTAX

```
RestoreBackground()
```

## STATEMENT

Restore the previously destroyed background of the current sprite buffer. Each sprite buffer has its own background area. The background has been saved with the command 'AddBufferedSprite()'.

## 1.12 spritedepth

### SYNTAX

```
Result.w = SpriteDepth(#Sprite)
```

### STATEMENT

Return the depth of the specified sprite.

## 1.13 spriteheight

### SYNTAX

```
Result.w = SpriteHeight(#Sprite)
```

### STATEMENT

Return the height in pixel of the specified sprite.

## 1.14 spritewidth

### SYNTAX

```
Result.w = SpriteWidth(#Sprite)
```

### STATEMENT

Return the width in pixel of the specified sprite.

## 1.15 startspriteserver

### SYNTAX

```
StartSpriteServer()
```

### STATEMENT

Allocate the 'Blitter' chip ressources in OS compliant way and initialize the server for immediate use. Once you have called this function, you can use quietly any of the AddSprite() functions. But remember than the Blitter is owned only by your program and the whole OS can no more use it (to draw window, text...). The graphics are freezed, so don't forget to stop the server as soon as you don't need anymore of the sprite functionality. A good idea is to start/stop the server at every frame so you will ensure a minimum for the OS survive... This function is of course very fast.

Some additional notes about the sprite server (for advanced users):



The server can be seen as a queue list and when you add a sprite to this list there are two possibilities: the list is empty, so the sprite is displayed immediately, or the list has some entries and your sprite is added at the end of the list. All the entries are processed one after another, in the right order. The good point on this system is that the main CPU doesn't need to wait until the 'Blitter' finishes his work. So we gain substantial CPU power against other classic solutions. To be sure that all your sprites have been displayed, simply use the 'WaitSpriteServer()' command.

## 1.16 stopspriteserver

### SYNTAX

```
StopSpriteServer()
```

### STATEMENT

Stop the sprite server activity and release immediately the 'Blitter' chip to the AmigaOS. If some sprites haven't been displayed, there are lost. This command is very fast.

## 1.17 usespritebuffer

### SYNTAX

```
UseSpriteBuffer(#SpriteBuffer)
```

### STATEMENT

Change the current sprite buffer with the supplied one.

## 1.18 waitspriteserver

### SYNTAX

```
WaitSpriteServer()
```

### STATEMENT

Wait until the sprite server has finished to display all the sprites. This command is needed unless you are sure that all your sprites have been displayed. This command should be typically called at the end of the main loop, when all other 'CPU' only functions have been processed. It's one of the advantages of the parallel working: you can use the CPU while the sprites are displayed.

## 1.19 loadsprites

### SYNTAX

```
Result.l = LoadSprites(#Sprite.l, #Sprite.l, FileName$, Chip/Fast)
```

### FUNCTION

Load in some sprites from disk, the file must been saved with SaveSprites().

The new sprite objects will be loaded over any old ones, so make sure it's free where you decide to put them.

Sprite

This is the first sprite object that will be initialized with the first sprite from file.

Sprite

The last sprite object that will be initialized from sprite file, it don't have to be the last sprite in the sprite file.

FileName

The full path to the sprite file.

Chip/Fast

#MEMF\_CHIP (2) or #MEMF\_FAST (4).

Result

This show how many sprites that have been successfully loaded.

If there is some uninitialized sprite objects somewhere in the sprite file they will not be counted in here.

## 1.20 savesprites

SYNTAX

Result.l = SaveSprites(#Sprite.l,#Sprite.l,FileName\$)

FUNCTION

To save a bunch of sprite objects to disk.

Sprite

Start to save from this sprite object.

Sprite

This is the last sprite object that will be saved to the sprite file.

FileName

The full path to the sprite file.

Result

This show how many sprites that have been successfully saved.

If there is some uninitialized sprite objects somewhere they will not be

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counted in here.

## 1.21 copysprite

### SYNTAX

```
Result.l = CopySprite(#Sprite.l,#Sprite.l,Chip/Fast)
```

### FUNCTION

To make a complet copy of a sprite object then call this function.

Could be used to quickly move sprites to chipmem from a buffer of sprites that recides in fastmem.

Sprite

Make a copy out of this sprite object.

Sprite

The copy will end up in this sprite object.

Chip/Fast

#MEMF\_CHIP (2) or #MEMF\_FAST (4).

Result

TRUE if the copy have been done.

## 1.22 flushspritebuffer

### SYNTAX

```
FlushSpriteBuffer(#SpriteBuffer.l)
```

### STATEMENT

Use this statement to clear a spritebuffer from the background data.

SpriteBuffer

The spritebuffer to flush.

## 1.23 spritehandler

### SYNTAX

```
SpriteHandler(#Sprite.l,x.w,y.w)
```

### STATEMENT

Call this statement to give the sprite x and y offset values from upper left corner.

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Sprite

The sprite object to give a new x and/or y handler.

x

The x offset.

y

The y offset.

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