

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
- FreeSprite
- FreeSpriteBuffer
- InitSprite
- LoadSprite
- ResetSpriteServer
- RestoreBackground
- SpriteDepth
- 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 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.

1.3 addbufferedsprite

SYNTAX

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

COMMAND

Display the sprite at the specified position on the current sprite buffer. Before to display 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 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.

1.4 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

SYNTAX

```
FreeSpriteBuffer(#SpriteBuffer)
```

FUNCTION

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

1.8 initsprite

SYNTAX

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

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, a negative value is returned. Else, all is fine... Here are the possible values for 'Result':

- 1 : File not found or can't be opened.
- 2 : This file is not an IFF/ILBM file
- 3 : Not enough memory
- 4 : Corrupted IFF/ILBM file

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 resources 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 that the Blitter is owned only by your program and the whole OS can no more use it (to draw window, text...). The graphics are frozen, 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 one, 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 than all your sprites has 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 than all your sprites has 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 advantage of the parallel working: you can use the CPU while the sprite are displayed.