

**gLib2D**  
Beta2

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# Chapter 1

## gLib2D Documentation

### 1.1 Introduction

gLib2D by Geecko - A simple, fast, light-weight 2D graphics library.

This library has been designed to replace the old graphics.c library and to simplify the use of the pspgu.

The goals : keep it simple, keep it small, keep it fast.

### 1.2 Known limitations

- Only rectangles can be used. Other primitives, like triangles or lines are just skipped.
- You can't get infos about current properties.
- When some 512\*512 rotated, colorized and scaled textures are rendered at a time, the framerate \*could\* go under 60 fps.

### 1.3 Installation

- Simply put glib2d.c and [glib2d.h](#) in your source directory.
- Then add glib2d.o and link "-lpng -ljpeg -lz -lpsgu -lm" in your Makefile.
- You're done !

### 1.4 License

This work is licensed under the Creative Commons BY-SA 3.0 License.

See <http://creativecommons.org/licenses/by-sa/3.0/> for more details.

### 1.5 Contact

Please report bugs or submit ideas at : [geecko.dev@free.fr](mailto:geecko.dev@free.fr)



## Chapter 2

# Data Structure Index

### 2.1 Data Structures

Here are the data structures with brief descriptions:

<a href="#">gImage</a> (Image structure) . . . . .	<a href="#">7</a>
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# **Chapter 3**

## **File Index**

### **3.1 File List**

Here is a list of all documented files with brief descriptions:

<a href="#">glib2d.h</a> (GLib2D Header) . . . . .	9
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# Chapter 4

## Data Structure Documentation

### 4.1 gImage Struct Reference

Image structure.

```
#include <glib2d.h>
```

#### Data Fields

- int `tw`
- int `th`
- int `w`
- int `h`
- float `ratio`
- bool `swizzled`
- bool `can_blend`
- `gColor * data`

#### 4.1.1 Detailed Description

Image structure.

#### 4.1.2 Field Documentation

##### 4.1.2.1 bool gImage::can\_blend

Can the texture blend ?

##### 4.1.2.2 gColor\* gImage::data

Pointer to the texture raw data.

**4.1.2.3 int gImage::h**

Texture height, as seen when draw.

**4.1.2.4 float gImage::ratio**

Width/Height ratio.

**4.1.2.5 bool gImage::swizzled**

Is the texture swizzled ?

**4.1.2.6 int gImage::th**

Real texture height. A power of two.

**4.1.2.7 int gImage::tw**

Real texture width. A power of two.

**4.1.2.8 int gImage::w**

Texture width, as seen when draw.

The documentation for this struct was generated from the following file:

- [glib2d.h](#)

# Chapter 5

## File Documentation

### 5.1 glib2d.h File Reference

gLib2D Header

#### Data Structures

- struct [gImage](#)  
*Image structure.*

#### Defines

- #define [USE\\_PNG](#)  
*Choose if the PNG support is enabled.*
- #define [USE\\_JPEG](#)  
*Choose if the JPEG support is enabled.*
- #define [G\\_SCR\\_W](#) (480)  
*Screen width constant, in pixels.*
- #define [G\\_SCR\\_H](#) (272)  
*Screen height constant, in pixels.*
- #define [G\\_FALSE](#) 0  
*Boolean constant, false or 0.*
- #define [G\\_TRUE](#) !0  
*Boolean constant, true or 1.*
- #define [G\\_RGBA](#)(r, g, b, a) ((r)|((g)<<8)|((b)<<16)|((a)<<24))  
*Create a gColor.*

- #define **G\_GET\_R**(color) (((color) ) & 0xFF)  
*Get red channel value from a gColor.*
- #define **G\_GET\_G**(color) (((color)>>8 ) & 0xFF)  
*Get green channel value from a gColor.*
- #define **G\_GET\_B**(color) (((color)>>16) & 0xFF)  
*Get blue channel value from a gColor.*
- #define **G\_GET\_A**(color) (((color)>>24) & 0xFF)  
*Get alpha channel value from a gColor.*
- #define **G\_MODULATE**(color, luminance, alpha)  
*gColor modulation.*

## Typedefs

- typedef char **bool**  
*Boolean type.*
- typedef unsigned char **gAlpha**  
*Alpha type.*
- typedef unsigned int **gColor**  
*Color type.*
- typedef int **gEnum**  
*Enumeration type.*

## Enumerations

- enum **gColors** {
   
**RED** = 0xFF0000FF, **GREEN** = 0xFF00FF00, **BLUE** = 0xFFFF0000, **CYAN** = 0xFFFFFFF00,
   
**MAGENTA** = 0xFFFF00FF, **YELLOW** = 0xFF00FFFF, **AZURE** = 0xFFFF7F00, **VIOLET** = 0xFFFF007F,
   
**ROSE** = 0xFF7F00FF, **ORANGE** = 0xFF007FFF, **CHARTREUSE** = 0xFF00FF7F, **SPRING\_-GREEN** = 0xFF7FFF00,
   
**WHITE** = 0xFFFFFFFF, **LITEGRAY** = 0xFFFBFBFB, **GRAY** = 0xFF7F7F7F, **DARKGRAY** = 0xFF3F3F3F,
   
**BLACK** = 0xFF000000 }
   
*Colors enumeration.*
- enum **gCoord\_Mode** {
   
**G\_UP\_LEFT**, **G\_UP\_RIGHT**, **G\_DOWN\_RIGHT**, **G\_DOWN\_LEFT**,
   
**G\_CENTER** }
   
*Coord modes enumeration.*

## Functions

- void **gClear** (**gColor** color)  
*Clears screen & depth buffer, starts rendering.*
- void **gClearZ** ()  
*Clears depth buffer.*
- void **gBegin** (**gImage** \*tex)  
*Begins object rendering.*
- void **gEnd** ()  
*Ends object rendering.*
- void **gReset** ()  
*Resets current transformation and attribution.*
- void **gFlip** (**bool** use\_vsync)  
*Flips the screen.*
- void **gAdd** ()  
*Pushes the current transformation & attribution to a new object.*
- void **gPush** ()  
*Saves the current transformation to stack.*
- void **gPop** ()  
*Restore the current transformation from stack.*
- void **gTexFree** (**gImage** \*\*tex)  
*Frees an image & set the pointer to NULL.*
- **gImage** \* **gTexLoad** (char path[ ], **bool** use\_swizzle)  
*Loads an image.*
- void **gResetCoord** ()  
*Resets the current coordinates.*
- void **gSetCoordMode** (**gEnum** mode)  
*Set coordinate mode.*
- void **gSetCoordXY** (float x, float y)  
*Sets the new position.*
- void **gSetCoordXYZ** (float x, float y, float z)  
*Sets the new position, with depth support.*
- void **gSetCoordXYRelative** (float x, float y, **bool** use\_rot)  
*Sets the new position, relative to the current.*

- void **gSetCoordXYZRelative** (float x, float y, float z, **bool** use\_rot)  
*Sets the new position, with depth support, relative to the current.*
- void **gResetCrop** ()  
*Resets the current crop.*
- void **gSetCropXY** (int x, int y)  
*Sets the new crop position.*
- void **gSetCropWH** (int w, int h)  
*Sets the new crop size.*
- void **gSetCropXYRelative** (int x, int y)  
*Sets the new crop position, relative to the current.*
- void **gSetCropWHRelative** (int w, int h)  
*Sets the new crop size, relative to the current.*
- void **gResetScale** ()  
*Resets the current scale.*
- void **gSetScale** (float w, float h)  
*Sets the new scale.*
- void **gSetScaleWH** (int w, int h)  
*Sets the new scale, in pixels.*
- void **gSetScaleRelative** (float w, float h)  
*Sets the new scale, relative to the current.*
- void **gSetScaleWHRelative** (int w, int h)  
*Sets the new scale, in pixels, relative to the current.*
- void **gResetColor** ()  
*Resets the current color.*
- void **gResetAlpha** ()  
*Resets the current alpha.*
- void **gSetColor** (**gColor** color)  
*Sets the new color.*
- void **gSetAlpha** (**gAlpha** alpha)  
*Sets the new alpha.*
- void **gSetAlphaRelative** (int alpha)  
*Sets the new alpha, relative to the current alpha.*
- void **gResetRotation** ()  
*Resets the current rotation.*

- void `gSetRotationRad` (float radians)  
*Sets the new rotation, in radians.*
- void `gSetRotation` (float degrees)  
*Sets the new rotation, in degrees.*
- void `gSetRotationRadRelative` (float radians)  
*Sets the new rotation, relative to the current, in radians.*
- void `gSetRotationRelative` (float degrees)  
*Sets the new rotation, relative to the current, in degrees.*
- void `gSetTexBlend` (bool use)  
*Use the alpha blending with the texture.*
- void `gSetTexLinear` (bool use)  
*Use the bilinear filter with the texture.*

### 5.1.1 Detailed Description

gLib2D Header

#### Version

Beta 2

### 5.1.2 Define Documentation

#### 5.1.2.1 #define G\_MODULATE( color, luminance, alpha )

##### Value:

```
G_RGBA(luminance*G_GET_R(color)/255, \
        luminance*G_GET_G(color)/255, \
        luminance*G_GET_B(color)/255, \
        alpha      *G_GET_A(color)/255)
```

gColor modulation.

This macro modulates the luminance & alpha of a gColor. Input range is from 0 to 255.

#### 5.1.2.2 #define G\_RGBA( r, g, b, a ) ((r)|(g)<<8)|(b)<<16|(a)<<24))

Create a gColor.

This macro creates a gColor from 4 values, red, green, blue and alpha. Input range is from 0 to 255.

### 5.1.2.3 #define USE\_JPEG

Choose if the JPEG support is enabled.

Otherwise, this part will be not compiled to gain some space. Enable this to get JPEG support, disable to avoid compilation errors when libjpeg is not linked in the Makefile.

### 5.1.2.4 #define USE\_PNG

Choose if the PNG support is enabled.

Otherwise, this part will be not compiled to gain some space. Enable this to get PNG support, disable to avoid compilation errors when libpng is not linked in the Makefile.

## 5.1.3 Enumeration Type Documentation

### 5.1.3.1 enum gColors

Colors enumeration.

Primary, secondary, tertiary and grayscale colors are defined.

### 5.1.3.2 enum gCoord\_Mode

Coord modes enumeration.

Choose where the coordinates correspond in the object. This can be a corner or the center.

## 5.1.4 Function Documentation

### 5.1.4.1 void gAdd( )

Pushes the current transformation & attribution to a new object.

This function must be called during object rendering. This is a \*basic\* function.

### 5.1.4.2 void gBegin( gImage \* tex )

Begins object rendering.

#### Parameters

*tex* Pointer to a texture, pass NULL to get a colored object.

This function begins object rendering. Calls [gReset\(\)](#). Only one texture can be used, but multiple objects can be rendered at a time. [gBegin\(\)](#) / [gEnd\(\)](#) couple can be called multiple times in the loop, to render multiple textures.

### 5.1.4.3 void gClear( gColor color )

Clears screen & depth buffer, starts rendering.

**Parameters**

*color* Screen clear color

This function clears the screen, and calls [gClearZ\(\)](#) if depth coordinate is used in the loop. You MUST call this function at the beginning of the loop to start the render process. Will automatically init the GU.

**5.1.4.4 void gClearZ( )**

Clears depth buffer.

This function clears the zbuffer to zero (z range 0-65535).

**5.1.4.5 void gEnd( )**

Ends object rendering.

This function ends object rendering. Must be called after [gBegin\(\)](#) to add objects to the display list. Automatically adapts pspgu functionnalities to get the best performance possible.

**5.1.4.6 void gFlip( bool use\_vsync )**

Flips the screen.

**Parameters**

*use\_vsync* Limit FPS to 60 ?

This function must be called at the end of the loop. Inverts screen buffers to display the whole thing.

**5.1.4.7 void gPop( )**

Restore the current transformation from stack.

This function must be called during object rendering. The stack is 64 saves high. Use it like the OpenGL one.

**5.1.4.8 void gPush( )**

Saves the current transformation to stack.

This function must be called during object rendering. The stack is 64 saves high. Use it like the OpenGL one.

**5.1.4.9 void gReset( )**

Resets current transformation and attribution.

This function must be called during object rendering. Calls [gResetCoord\(\)](#), [gResetRotation\(\)](#), [gResetScale\(\)](#), [gResetColor\(\)](#), [gResetAlpha\(\)](#) and [gResetCrop\(\)](#).

**5.1.4.10 void gResetAlpha( )**

Resets the current alpha.

This function must be called during object rendering. Sets [gSetAlpha\(\)](#) to 255.

**5.1.4.11 void gResetColor( )**

Resets the current color.

This function must be called during object rendering. Sets [gSetColor\(\)](#) to WHITE.

**5.1.4.12 void gResetCoord( )**

Resets the current coordinates.

This function must be called during object rendering. Sets [gSetCoordMode\(\)](#) to G\_UP\_LEFT and [gSetCoordXYZ\(\)](#) to (0,0,0).

**5.1.4.13 void gResetCrop( )**

Resets the current crop.

This function must be called during object rendering. Sets [gSetCropXY\(\)](#) to (0;0) and [gSetCropWH\(\)](#) to (tex->w,tex->h) or (10,10).

**5.1.4.14 void gResetRotation( )**

Resets the current rotation.

This function must be called during object rendering. Sets [gSetRotation\(\)](#) to 0°.

**5.1.4.15 void gResetScale( )**

Resets the current scale.

This function must be called during object rendering. Sets the scale to the current image size or (10,10).

**5.1.4.16 void gSetAlpha( *gAlpha alpha* )**

Sets the new alpha.

**Parameters**

*alpha* The new alpha (0-255).

This function must be called during object rendering. Can be used for both textured and non-textured objects.

**5.1.4.17 void gSetAlphaRelative( int *alpha* )**

Sets the new alpha, relative to the current alpha.

**Parameters**

*alpha* The new alpha increment.

This function must be called during object rendering. Can be used for both textured and non-textured objects.

**5.1.4.18 void gSetColor ( gColor *color* )**

Sets the new color.

**Parameters**

*color* The new color.

This function must be called during object rendering. Can be used to colorize a non-textured objet. Can also be used as a color mask for a texture.

**5.1.4.19 void gSetCoordMode ( gEnum *mode* )**

Set coordinate mode.

**Parameters**

*mode* A gCoord\_Mode.

This function must be called during object rendering. Defines where the coordinates correspond in the object. Works even if the texture is inverted.

**5.1.4.20 void gSetCoordXY ( float *x*, float *y* )**

Sets the new position.

**Parameters**

*x* New x, in pixels.

*y* New y, in pixels.

This function must be called during object rendering.

**5.1.4.21 void gSetCoordXYRelative ( float *x*, float *y*, bool *use\_rot* )**

Sets the new position, relative to the current.

**Parameters**

*x* New x increment, in pixels.

*y* New y increment, in pixels.

*use\_rot* Take account of the rotation ?

This function must be called during object rendering.

**5.1.4.22 void gSetCoordXYZ ( float *x*, float *y*, float *z* )**

Sets the new position, with depth support.

**Parameters**

- x* New x, in pixels.
- y* New y, in pixels.
- z* New z, in pixels. (0-65535)

This function must be called during object rendering.

**5.1.4.23 void gSetCoordXYZRelative ( float *x*, float *y*, float *z*, bool *use\_rot* )**

Sets the new position, with depth support, relative to the current.

**Parameters**

- x* New x increment, in pixels.
- y* New y increment, in pixels.
- z* New z increment, in pixels.
- use\_rot* Take account of the rotation ?

This function must be called during object rendering.

**5.1.4.24 void gSetCropWH ( int *w*, int *h* )**

Sets the new crop size.

**Parameters**

- w* New width, in pixels.
- h* New height, in pixels.

This function must be called during object rendering. Defines the rectangle size of the crop. If the rectangle is larger or next to the image, texture will be repeated. Useful for a tileset.

**5.1.4.25 void gSetCropWHRelative ( int *w*, int *h* )**

Sets the new crop size, relative to the current.

**Parameters**

- w* New width increment, in pixels.
- h* New height increment, in pixels.

This function must be called during object rendering. Defines the rectangle size of the crop. If the rectangle is larger or next to the image, texture will be repeated. Useful for a tileset.

**5.1.4.26 void gSetCropXY ( int *x*, int *y* )**

Sets the new crop position.

**Parameters**

- x* New x, in pixels.
- y* New y, in pixels.

This function must be called during object rendering. Defines the rectangle position of the crop. If the rectangle is larger or next to the image, texture will be repeated. Useful for a tileset.

**5.1.4.27 void gSetCropXYRelative ( int *x*, int *y* )**

Sets the new crop position, relative to the current.

**Parameters**

- x* New x increment, in pixels.
- y* New y increment, in pixels.

This function must be called during object rendering. Defines the rectangle position of the crop. If the rectangle is larger or next to the image, texture will be repeated. Useful for a tileset.

**5.1.4.28 void gSetRotation ( float *degrees* )**

Sets the new rotation, in degrees.

**Parameters**

- degrees* The new angle.

This function must be called during object rendering. The rotation center is the actual coordinates.

**5.1.4.29 void gSetRotationRad ( float *radians* )**

Sets the new rotation, in radians.

**Parameters**

- radians* The new angle.

This function must be called during object rendering. The rotation center is the actual coordinates.

**5.1.4.30 void gSetRotationRadRelative ( float *radians* )**

Sets the new rotation, relative to the current, in radians.

**Parameters**

- radians* The new angle increment.

This function must be called during object rendering. The rotation center is the actual coordinates.

**5.1.4.31 void gSetRotationRelative ( float *degrees* )**

Sets the new rotation, relative to the current, in degrees.

**Parameters**

*degrees* The new angle increment.

This function must be called during object rendering. The rotation center is the actual coordinates.

**5.1.4.32 void gSetScale ( float *w*, float *h* )**

Sets the new scale.

**Parameters**

*w* Width scale factor.

*h* Height scale factor.

This function must be called during object rendering. [gResetScale\(\)](#) is called, then width & height scale are multiplied by these values. Note: negative values can be passed to invert the image.

**5.1.4.33 void gSetScaleRelative ( float *w*, float *h* )**

Sets the new scale, relative to the current.

**Parameters**

*w* Width scale factor.

*h* Height scale factor.

This function must be called during object rendering. Current width & height scale are multiplied by these values. Note: negative values can be passed to invert the image.

**5.1.4.34 void gSetScaleWH ( int *w*, int *h* )**

Sets the new scale, in pixels.

**Parameters**

*w* New width, in pixels.

*h* New height, in pixels.

This function must be called during object rendering. Note: negative values can be passed to invert the image.

**5.1.4.35 void gSetScaleWHRelative ( int *w*, int *h* )**

Sets the new scale, in pixels, relative to the current.

**Parameters**

- w* New width to increment, in pixels.
- h* New height to increment, in pixels.

This function must be called during object rendering. Note: negative values can be passed to invert the image.

**5.1.4.36 void gSetTexBlend ( bool *use* )**

Use the alpha blending with the texture.

**Parameters**

- use* G\_TRUE to activate (better look, by default). G\_FALSE to deactivate (better performance).

This function must be called during object rendering. Automaticaly disabled when `gImage::can_blend` is set to G\_FALSE.

**5.1.4.37 void gSetTexLinear ( bool *use* )**

Use the bilinear filter with the texture.

**Parameters**

- use* G\_TRUE to activate (better look, by default). G\_FALSE to deactivate (better performance).

This function must be called during object rendering. Only useful when scaling.

**5.1.4.38 void gTexFree ( gImage \*\* *tex* )**

Frees an image & set the pointer to NULL.

**Parameters**

- tex* Pointer to the variable which contains the pointer.

This function is used to gain memory when an image is useless. Must pass the pointer to the variable which contains the pointer, to set it to NULL. This is a more secure approach.

**5.1.4.39 gImage\* gTexLoad ( char *path*[], bool *use\_swizzle* )**

Loads an image.

**Parameters**

- path* Path to the file.
- use\_swizzle* Pass G\_TRUE to get \_more\_ speed (recommended). Pass G\_FALSE to avoid artifacts.

**Returns**

Pointer to the image.

This function loads an image file. There is support for PNG & JPEG files (if USE\_PNG and USE\_JPEG are defined). Swizzling is enabled only for 16\*16+ textures (useless on small textures). Image support up to 512\*512 only.

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