GlowBit.py

Generated by Doxygen 1.8.13

Contents

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Hierarchical Index

1.1 Class Hierarchy

This inheritance list is sorted roughly, but not completely, alphabetically:

Chapter 2

Class Index

2.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

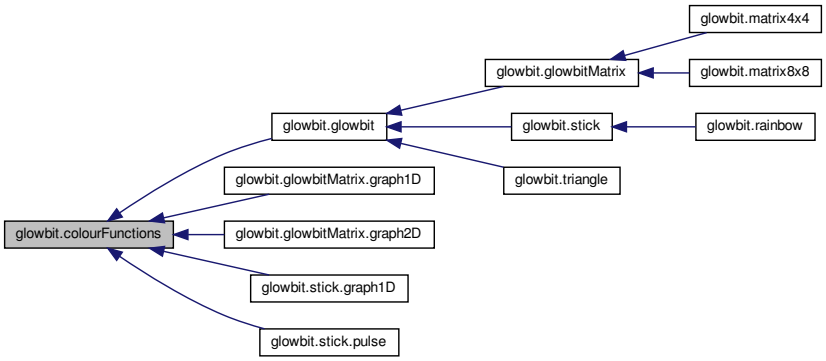
Chapter 3

Class Documentation

3.1 glowbit.colourFunctions Class Reference

Methods for transforming single colours to 32-bit packed GlowBit colour values.

Inheritance diagram for glowbit.colourFunctions:



Public Member Functions

- def wheel (self, pos)

  Converts an integer "colour wheel position" to a packed 32-bit RGB GlowBit colour value.
- def rgb2GBColour (self, r, g, b)

  Converts the r, g, and b integer arguments to a packed 32-bit RGB GlowBit colour value.

3.1.1 Detailed Description

Methods for transforming single colours to 32-bit packed GlowBit colour values.

A packed 32-bit GlowBit colour is an integer with 8-bits per colour channel data encoded in hexadecimal as follows:

0x00RRGGBB

where RR, GG, and BB are hexadecimal values (decimal [0,255]) and the most significant 8 bits are reserved and left as zero.

3.1.2 Member Function Documentation

3.1.2.1 rgb2GBColour()

```
def glowbit.colourFunctions.rgb2GBColour (
              self,
              r,
              g,
              b )
```

Converts the r, g, and b integer arguments to a packed 32-bit RGB GlowBit colour value.

All arguments are required as this is a micropython viper function.

Parameters

r	The red intensity, [0,255]
g	The green intensity, [0,255]
b	The blue intensity, [0,255]

Returns

Packed 32-bit GlowBit colour value

3.1.2.2 wheel()

```
def glowbit.colourFunctions.wheel (
              self,
              pos )
```

Converts an integer "colour wheel position" to a packed 32-bit RGB GlowBit colour value.

The "pos" argument is required as this is a micropython viper function.

Parameters

pos	Colour wheel position [0,255] is mapped to a pure hue in the RGB colourspace. A value of 0 or 255 is mapped to pure red with a smooth red-yellow-green-blue-purple-magenta-red transion for other values.

Returns

32-bit integer GlowBit colour value

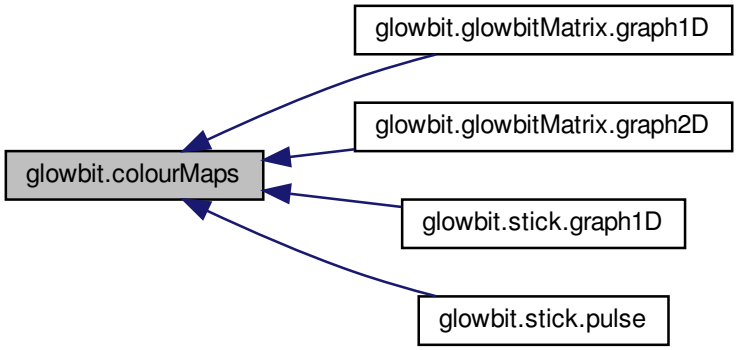
The documentation for this class was generated from the following file:

- glowbit.py

3.2 glowbit.colourMaps Class Reference

Methods which calculate colour gradients.

Inheritance diagram for glowbit.colourMaps:



Public Member Functions

- def colourMapSolid (self, index, minIndex, maxIndex)

  Trivial colourmap method which always returns the colour in the parent object.
- def colourMapRainbow (self, index, minIndex, maxIndex)

  Maps the pure hue colour wheel between minIndex and maxIndex.

3.2.1 Detailed Description

Methods which calculate colour gradients.

Custom colour map methods can be written and passed to several GlowBit library methods (eg: glowbit.stick.graph1D) but must accept the same positional arguments as the methods in this class.

3.2.2 Member Function Documentation

3.2.2.1 colourMapRainbow()

```
def glowbit.colourMaps.colourMapRainbow (
              self,
              index,
              minIndex,
              maxIndex )
```

Maps the pure hue colour wheel between minIndex and maxIndex.

Parameters

index	The value to be mapped
minIndex	The value of index mapped to a colour wheel angle of 0 degrees
maxIndex	The value of index mapped to a colour wheel angle of 360 degrees

Returns

The 32-bit packed GlowBit colour value

3.2.2.2 colourMapSolid()

```
def glowbit.colourMaps.colourMapSolid (
              self,
              index,
              minIndex,
              maxIndex )
```

Trivial colourmap method which always returns the colour in the parent object.

Parameters

index	Dummy argument for compatibility with colourmap method API
minIndex	Dummy argument for compatibility with colourmap method API
maxIndex	Dummy argument for compatibility with colourmap method API

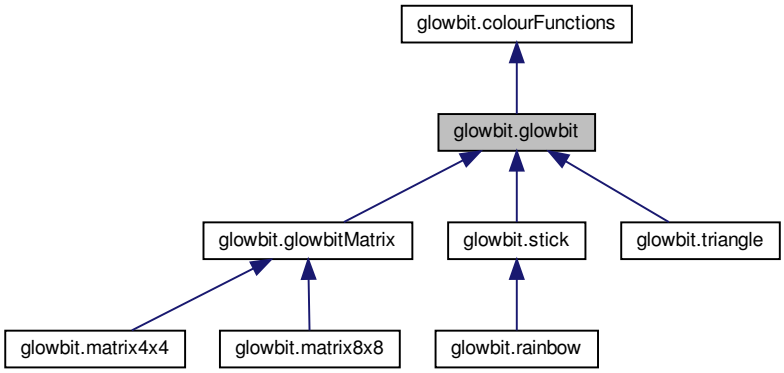
The documentation for this class was generated from the following file:

- glowbit.py

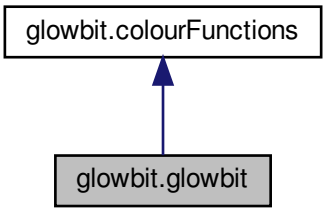
3.3 glowbit.glowbit Class Reference

Low-level methods common to all GlowBit classes.

Inheritance diagram for glowbit.glowbit:



Collaboration diagram for glowbit.glowbit:



Public Member Functions

- def pixelsShow (self)

  Pushes the internal pixel data buffer to the physical GlowBit LEDs.
- def pixelSet (self, i, colour)

  Sets the i'th GlowBit LED to a 32-bit GlowBit colour value.
- def pixelSetNow (self, i, colour)

  Sets the i'th GlowBit LED to a 32-bit GlowBit colour value and updates the physical LEDs.
- def pixelAdd (self, i, colour)

  Adds a 32-bit GlowBit colour value to the i'th LED.
- def **pixelsFill** (self, colour)
- def **pixelsFillNow** (self, colour)
- def **blankDisplay** (self)
- def **getPixel** (self, N)
- def **updateRateLimitFPS** (self, rateLimitFPS)
- def **chaos** (self, iters=100)

Public Attributes

- **lastFrame_ms**
- **rateLimit**

Static Public Attributes

- **sideset_init**
- **OUT_LOW**
- **out_shiftdir**
- **SHIFT_LEFT**
- **autopull**
- **True**
- **pull_thresh**

3.3.1 Detailed Description

Low-level methods common to all GlowBit classes.

3.3.2 Member Function Documentation

3.3.2.1 pixelAdd()

```
def glowbit.glowbit.pixelAdd (
            self,
            i,
            colour )
```

Adds a 32-bit GlowBit colour value to the i'th LED.

Data colour corruption will occur if the sum result of any RGB value exceeds 255. Care must be taken to avoid this manually. eg: if the blue channel's resulting intensity value is 256 it will be set to zero and the red channel incremented by 1. See the colourFunctions class documentation for the 32-bit GlowBit colour specification.

NB: For efficiency, this method does not do any index bounds checking. If the value of the parameter i is larger than the number of LEDs it will cause an IndexError exception.

Parameters

i	An LED's index
colour	The 32-bit GlowBit colour value

3.3.2.2 pixelSet()

```
def glowbit.glowbit.pixelSet (
              self,
              i,
              colour )
```

Sets the i'th GlowBit LED to a 32-bit GlowBit colour value.

NB: For efficiency, this method does not do any bounds checking. If the value of the parameter i is larger than the number of LEDs it will cause an IndexError exception.

Parameters

i	An LED's index
colour	The 32-bit GlowBit colour value

3.3.2.3 pixelSetNow()

```
def glowbit.glowbit.pixelSetNow (
              self,
              i,
              colour )
```

Sets the i'th GlowBit LED to a 32-bit GlowBit colour value and updates the physical LEDs.

NB: For efficiency, this method does not do any index bounds checking. If the value of the parameter i is larger than the number of LEDs it will cause an IndexError exception.

Parameters

i	An LED's index
colour	The 32-bit GlowBit colour value

3.3.2.4 pixelsShow()

```
def glowbit.glowbit.pixelsShow (
              self )
```

Pushes the internal pixel data buffer to the physical GlowBit LEDs.

This function must be called before the connected GlowBit LEDs will change colour.

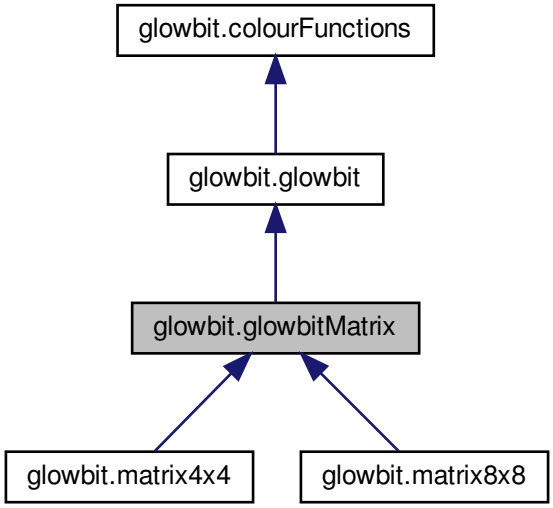
Note that several GlowBit library methods call this method unconditionally (eg: glowbit.blankDisplay()) or optionally (eg: by passing the update = True parameter to stick.graph1D())

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

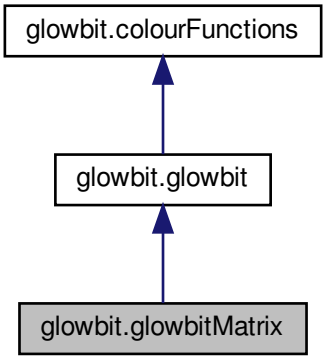
- glowbit.py

3.4 glowbit.glowbitMatrix Class Reference

Inheritance diagram for glowbit.glowbitMatrix:



Collaboration diagram for glowbit.glowbitMatrix:



Classes

- class graph1D
- class graph2D
- class raindrop

Public Member Functions

- def **pixelSetXY** (self, x, y, colour)
- def **pixelSetXYNow** (self, x, y, colour)
- def **pixelSetXYClip** (self, x, y, colour)
- def **pixelAddXY** (self, x, y, colour)
- def **pixelAddXYClip** (self, x, y, colour)
- def **getPixelXY** (self, x, y)
- def **drawLine** (self, x0, y0, x1, y1, colour)
- def **drawTriangle** (self, x0, y0, x1, y1, x2, y2, colour)
- def **drawRectangle** (self, x0, y0, x1, y1, colour)
- def **drawRectangleFill** (self, x0, y0, x1, y1, colour)
- def **drawCircle** (self, x0, y0, r, colour)
- def **updateGraph1D** (self, graph, value)
- def **updateGraph2D** (self, graph)
- def **lineDemo** (self, iters=10)
- def **fireworks** (self, iters=10)
- def **circularRainbow** (self)
- def **rain** (self, iters=1000, density=1)
- def **textDemo** (self, text="Scrolling Text Demo")
- def **bounce** (self, iters=1000)

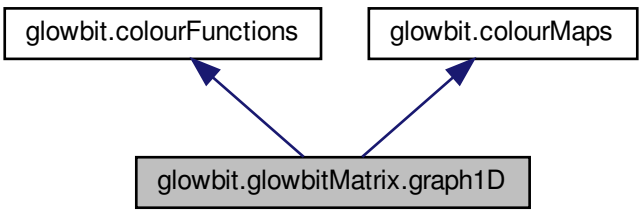
Additional Inherited Members

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

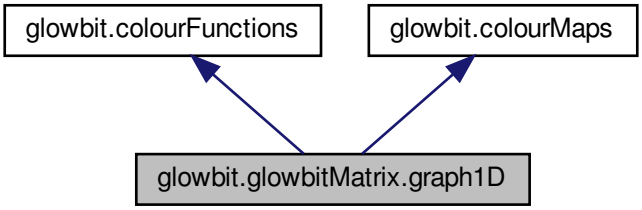
- glowbit.py

3.5 glowbit.glowbitMatrix.graph1D Class Reference

Inheritance diagram for glowbit.glowbitMatrix.graph1D:



Collaboration diagram for glowbit.glowbitMatrix.graph1D:



Public Member Functions

- def **__init__** (self, originX=0, originY=7, length=8, direction="Up", minValue=0, maxValue=255, colour=0x↩ FFFFFF, colourMap="Solid", update=False)

Public Attributes

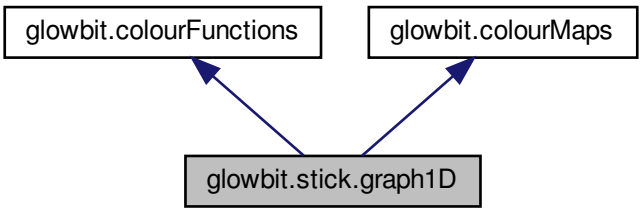
- **minValue**
- **maxValue**
- **originX**
- **originY**
- **length**
- **orientation**
- **inc**
- **m**
- **update**
- **colour**
- **colourMap**

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

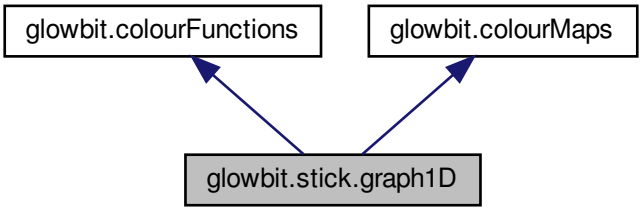
- glowbit.py

3.6 glowbit.stick.graph1D Class Reference

Inheritance diagram for glowbit.stick.graph1D:



Collaboration diagram for glowbit.stick.graph1D:



Public Member Functions

- def **__init__** (self, minValue=0, maxValue=255, minIndex=0, maxIndex=7, colour=0xFFFFFF, colourMap="↩ Solid", update=False)

Public Attributes

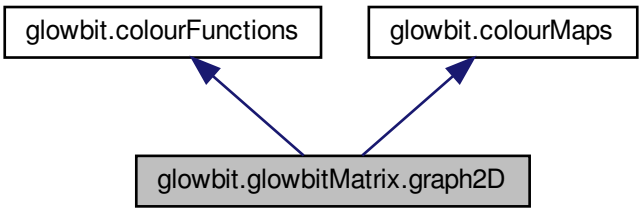
- **minValue**
- **maxValue**
- **minIndex**
- **maxIndex**
- **m**
- **offset**
- **update**
- **colour**
- **colourMap**

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

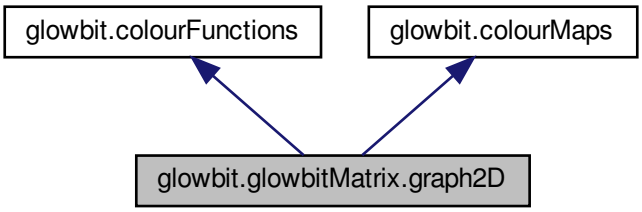
- glowbit.py

3.7 glowbit.glowbitMatrix.graph2D Class Reference

Inheritance diagram for glowbit.glowbitMatrix.graph2D:



Collaboration diagram for glowbit.glowbitMatrix.graph2D:



Public Member Functions

- def **__init__** (self, minValue=0, maxValue=255, originX=0, originY=7, width=8, height=8, colour=0xFFFFFF, bgColour=0x000000, colourMap="Solid", update=False, filled=False, bars=False)
- def **addData** (self, value)

Public Attributes

- **minValue**
- **maxValue**
- **originX**
- **originY**
- **width**
- **height**
- **colour**
- **bgColour**
- **update**

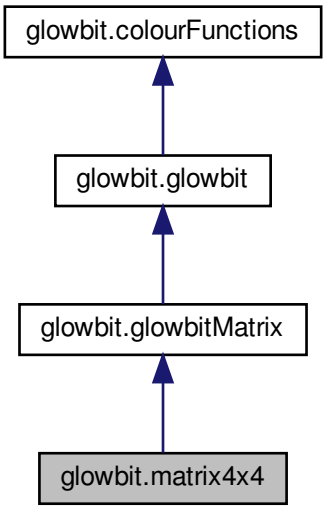
- **m**
- **offset**
- **bars**
- **data**
- **colourMap**

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

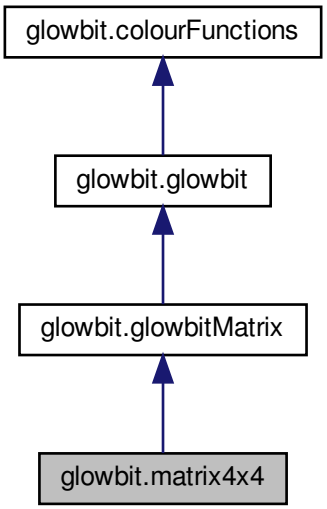
- glowbit.py

3.8 glowbit.matrix4x4 Class Reference

Inheritance diagram for glowbit.matrix4x4:



Collaboration diagram for glowbit.matrix4x4:



Public Member Functions

- def **__init__** (self, tiles=1, pin=18, brightness=20, mapFunction=None, rateLimitFPS=30, sm=0)
- def **remap4x4** (self, x, y)

Public Attributes

- **sm**
- **pixelsShow**
- **ticks_ms**
- **tiles**
- **numLEDs**
- **numLEDsX**
- **numLEDsY**
- **strip**
- **ar**
- **dimmer_ar**
- **lastFrame_ms**
- **scrollingText**
- **brightness**
- **remap**
- **rateLimit**

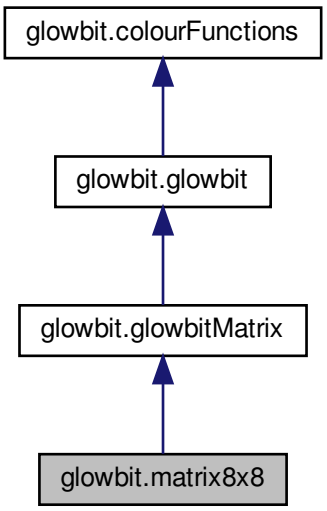
Additional Inherited Members

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

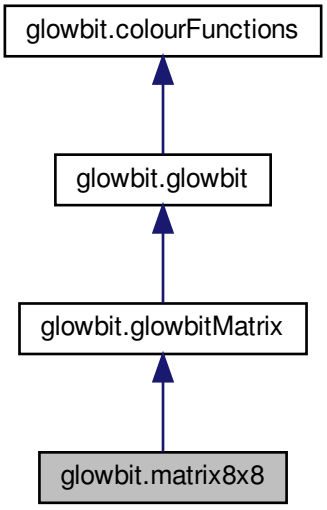
- glowbit.py

3.9 glowbit.matrix8x8 Class Reference

Inheritance diagram for glowbit.matrix8x8:



Collaboration diagram for glowbit.matrix8x8:



Classes

- class textScroll

Public Member Functions

- def **__init__** (self, tileRows=1, tileCols=1, pin=18, brightness=20, mapFunction=None, rateLimitFPS=-1, rateLimitCharactersPerSecond=-1, sm=0)
- def **printTextWrap** (self, string, x=0, y=0, colour=0xFFFFFF)
- def **addTextScroll** (self, string, y=0, x=0, colour=0xFFFFFF, bgColour=0x000000, update=False, blocking=↩ False)
- def **updateTextScroll** (self)
- def **remap8x8** (self, x, y)
- def **drawChar** (self, char, Px, Py, colour)
- def updateRateLimitCharactersPerSecond (self, rateLimitCharactersPerSecond)

  Changes the 8x8 matrix display's update rate in units of "characters of scrolling text per second".

Public Attributes

- **tileRows**
- **tileCols**
- **numLEDs**
- **numLEDsX**
- **numLEDsY**
- **sm**
- **pixelsShow**
- **ticks_ms**
- **strip**
- **ar**
- **dimmer_ar**
- **brightness**
- **scrollingText**
- **lastFrame_ms**
- **rateLimit**
- **scrollingTextList**
- **remap**
- **updateText**
- **update**

Additional Inherited Members

3.9.1 Member Function Documentation

3.9.1.1 updateRateLimitCharactersPerSecond()

```
def glowbit.matrix8x8.updateRateLimitCharactersPerSecond (
              self,
              rateLimitCharactersPerSecond )
```

Changes the 8x8 matrix display's update rate in units of "characters of scrolling text per second".

For example, a value of 2 would scroll 2 charcters per second; leaving each character at least partly visible for 0.5 seconds.

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

- glowbit.py

3.10 glowbit.micropython Class Reference

Public Member Functions

- def **viper** (func)

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

- glowbit.py

3.11 glowbit.rp2.PIO Class Reference

Static Public Attributes

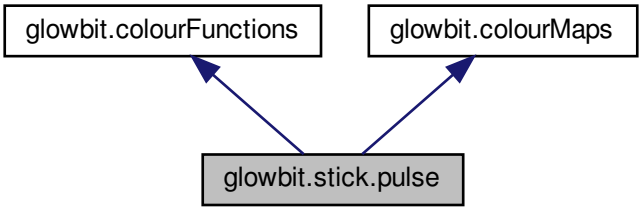
- **OUT_LOW** = None
- **SHIFT_LEFT** = None

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

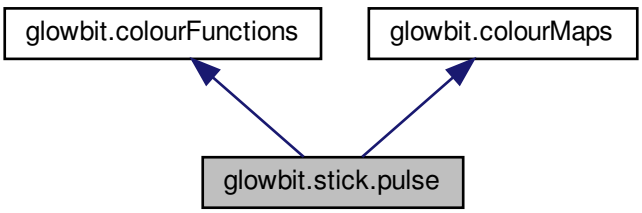
- glowbit.py

3.12 glowbit.stick.pulse Class Reference

Inheritance diagram for glowbit.stick.pulse:



Collaboration diagram for glowbit.stick.pulse:



Public Member Functions

- def **__init__** (self, speed=100, colour=0xFFFFFF, index=0, colourMap=None)
- def **update** (self)

Public Attributes

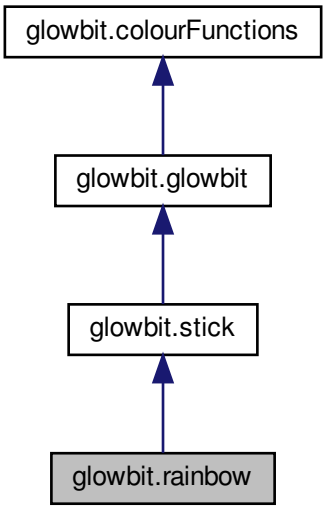
- **speed**
- **index**
- **position**
- **colour**
- **colourMap**

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

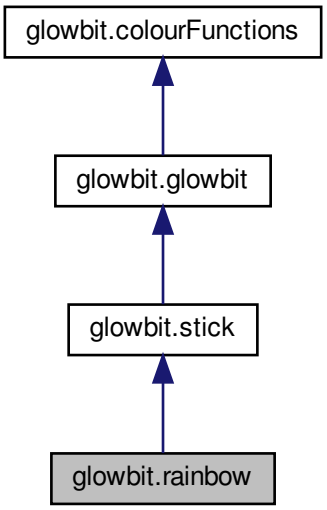
- glowbit.py

3.13 glowbit.rainbow Class Reference

Inheritance diagram for glowbit.rainbow:



Collaboration diagram for glowbit.rainbow:



Public Member Functions

- def **__init__** (self, numLEDs=13, pin=18, brightness=40, rateLimitFPS=60, sm=0)
- def **pixelSetAngle** (self, angle, colour)
- def **drawRainbow** (self, offset=0)
- def **rainbowLoop** (self)

Additional Inherited Members

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

- glowbit.py

3.14 glowbit.glowbitMatrix.raindrop Class Reference

Public Member Functions

- def **__init__** (self, x, speed)
- def **update** (self)
- def **getY** (self)

Public Attributes

- **x**
- **speed**
- **y**

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

- glowbit.py

3.15 glowbit.rp2 Class Reference

Classes

- class PIO

Public Member Functions

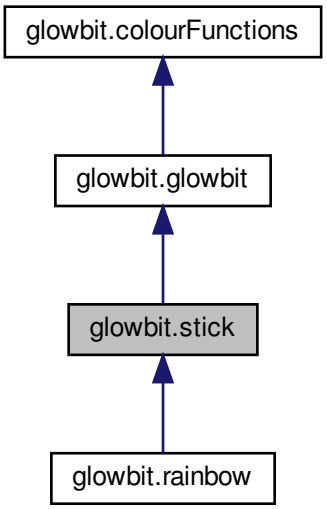
- def **asm_pio** (sideset_init, out_shiftdir, autopull, pull_thresh)

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

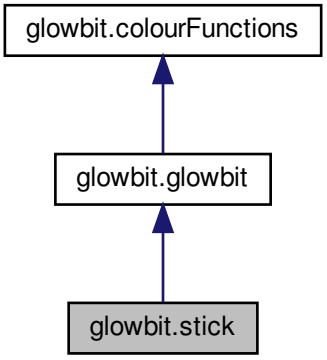
- glowbit.py

3.16 glowbit.stick Class Reference

Inheritance diagram for glowbit.stick:



Collaboration diagram for glowbit.stick:



Classes

- class graph1D
- class pulse

Public Member Functions

- def **__init__** (self, numLEDs=8, pin=18, brightness=20, rateLimitFPS=30, sm=0)
- def **addPulse** (self, speed=100, colour=[0xFFFFFF], index=0, colourMap=None)
- def **updatePulses** (self)
- def **updateGraph1D** (self, graph, value)
- def **fillSlice** (self, i=0, j=-1, colour=0xFFFFFF)
- def **pulseDemo** (self, iters=480)
- def **graphDemo** (self, iters=3)
- def **sliceDemo** (self)

Public Attributes

- **sm**
- **pixelsShow**
- **ticks_ms**
- **numLEDs**
- **strip**
- **lastFrame_ms**
- **ar**
- **dimmer_ar**
- **rateLimit**
- **brightness**
- **pulses**

Additional Inherited Members

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

- glowbit.py

3.17 glowbit.matrix8x8.textScroll Class Reference

Public Member Functions

- def **__init__** (self, string, y=0, x=0, colour=0xFFFFFF, bgColour=0)

Public Attributes

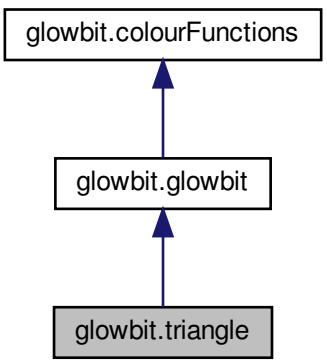
- **x**
- **y**
- **colour**
- **bgColour**
- **string**

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

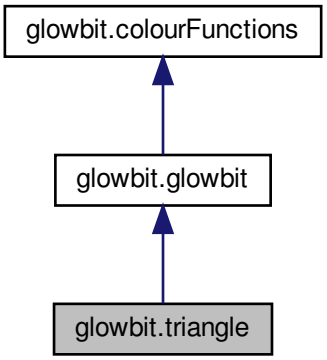
- glowbit.py

3.18 glowbit.triangle Class Reference

Inheritance diagram for glowbit.triangle:



Collaboration diagram for glowbit.triangle:



Public Member Functions

- def **__init__** (self, numTris=1, pin=18, brightness=20, rateLimitFPS=-1, sm=0, LEDsPerTri=6)
- def **fillTri** (self, tri, colour)

Public Attributes

- **sm**
- **pixelsShow**
- **ticks_ms**
- **LEDsPerTri**
- **numLEDs**
- **numTris**
- **strip**
- **ar**
- **dimmer_ar**
- **rateLimit**
- **brightness**
- **lastFrame_ms**

Additional Inherited Members

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

- glowbit.py

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