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# CGShading Reference

Graphics & Animation: 2D Drawing



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# CGShading Reference

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| <b>Derived From:</b>   | CType                                     |
| <b>Framework:</b>      | ApplicationServices/ApplicationServices.h |
| <b>Companion guide</b> | Quartz 2D Programming Guide               |
| <b>Declared in</b>     | CGShading.h                               |

## Overview

`CGShadingRef` is an opaque type used to define linear (axial) and radial gradient fills whose color transitions are controlled by a function (`CGFunctionRef`) that you provide. Shading means to fill using a smooth transition between colors across an area. To paint with a Quartz shading, you call `CGContextDrawShading`. This function fills the current clipping path using the specified color gradient, calling your parametric function repeatedly as it draws.

An alternative to using a `CGShading` object is to use the `CGGradientRef` opaque type. For applications that run in Mac OS X v10.5 and later, `CGGradient` objects are much simpler to use. (See *CGGradient Reference*.)

## Functions by Task

### Creating Shading Objects

[CGShadingCreateAxial](#) (page 6)

Creates a shading object to use for axial shading.

[CGShadingCreateRadial](#) (page 7)

Creates a shading object to use for radial shading.

### Retaining and Releasing Shading Objects

[CGShadingRetain](#) (page 8)

Increments the retain count of a shading object.

[CGShadingRelease](#) (page 8)

Decrements the retain count of a shading object.

## Getting the CTypeID

[CGShadingGetTypeID](#) (page 8)

Returns the Core Foundation type identifier for Quartz shading objects.

## Functions

### CGShadingCreateAxial

Creates a shading object to use for axial shading.

```
CGShadingRef CGShadingCreateAxial (
    CGColorSpaceRef colorspace,
    CGPoint start,
    CGPoint end,
    CGFunctionRef function,
    bool extendStart,
    bool extendEnd
);
```

#### Parameters

*colorspace*

The color space in which color values are expressed. Quartz retains this object; upon return, you may safely release it.

*start*

The starting point of the axis, in the shading's target coordinate space.

*end*

The ending point of the axis, in the shading's target coordinate space.

*function*

A `CGFunction` object created by the function `CGFunctionCreate`. This object refers to your function for creating an axial shading. Quartz retains this object; upon return, you may safely release it.

*extendStart*

A Boolean value that specifies whether to extend the shading beyond the starting point of the axis.

*extendEnd*

A Boolean value that specifies whether to extend the shading beyond the ending point of the axis.

#### Return Value

A new Quartz axial shading. You are responsible for releasing this object using [CGShadingRelease](#) (page 8).

#### Discussion

An axial shading is a color blend that varies along a linear axis between two endpoints and extends indefinitely perpendicular to that axis. When you are ready to draw the shading, call the function `CGContextDrawShading`.

#### Availability

Available in Mac OS X version 10.2 and later.

#### Related Sample Code

Quartz 2D Shadings

SampleRaster

**Declared In**

CGShading.h

**CGShadingCreateRadial**

Creates a shading object to use for radial shading.

```
CGShadingRef CGShadingCreateRadial (
    CGColorSpaceRef colorspace,
    CGPoint start,
    CGFloat startRadius,
    CGPoint end,
    CGFloat endRadius,
    CGFunctionRef function,
    bool extendStart,
    bool extendEnd
);
```

**Parameters***colorspace*

The color space in which color values are expressed. Quartz retains this object; upon return, you may safely release it.

*start*

The center of the starting circle, in the shading's target coordinate space.

*startRadius*

The radius of the starting circle, in the shading's target coordinate space.

*end*

The center of the ending circle, in the shading's target coordinate space.

*endRadius*

The radius of the ending circle, in the shading's target coordinate space.

*function*

A CGFunction object created by the function `CGFunctionCreate`. This object refers to your function for creating a radial shading. Quartz retains this object; upon return, you may safely release it.

*extendStart*

A Boolean value that specifies whether to extend the shading beyond the starting circle.

*extendEnd*

A Boolean value that specifies whether to extend the shading beyond the ending circle.

**Return Value**

A new Quartz radial shading. You are responsible for releasing this object using [CGShadingRelease](#) (page 8).

**Discussion**

A radial shading is a color blend that varies between two circles. To draw the shading, call the function `CGContextDrawShading`.

**Availability**

Available in Mac OS X version 10.2 and later.

**Related Sample Code**

Quartz 2D Shadings

**Declared In**

CGShading.h

**CGShadingGetTypeID**

Returns the Core Foundation type identifier for Quartz shading objects.

```

CFTypeID CGShadingGetTypeID (
    void
);

```

**Return Value**The Core Foundation identifier for the opaque type [CGShadingRef](#) (page 9).**Availability**

Available in Mac OS X version 10.2 and later.

**Declared In**

CGShading.h

**CGShadingRelease**

Decrements the retain count of a shading object.

```

void CGShadingRelease (
    CGShadingRef shading
);

```

**Parameters***shading*

The shading object to release.

**Discussion**This function is equivalent to `CFRelease`, except that it does not cause an error if the *shading* parameter is `NULL`.**Availability**

Available in Mac OS X version 10.2 and later.

**Related Sample Code**

Quartz 2D Shadings

SampleRaster

**Declared In**

CGShading.h

**CGShadingRetain**

Increments the retain count of a shading object.

```
CGShadingRef CGShadingRetain (  
    CGShadingRef shading  
);
```

**Parameters**

*shading*

The shading object to retain.

**Return Value**

The same shading object you passed in as the `shading` parameter.

**Discussion**

This function is equivalent to `CFRetain`, except that it does not cause an error if the `shading` parameter is `NULL`.

**Availability**

Available in Mac OS X version 10.2 and later.

**Declared In**

`CGShading.h`

## Data Types

### **CGShadingRef**

An opaque type that represents a Quartz shading.

```
typedef struct CGShading *CGShadingRef;
```

**Availability**

Available in Mac OS X v10.2 and later.

**Declared In**

`CGShading.h`



# Document Revision History

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This table describes the changes to *CGShading Reference*.

| Date       | Notes   |
|------------|---|
| 2006-12-22 | Updated the introduction to provide a contrast with the <code>CGGradient</code> opaque type.                    |
|            | All instances of the <code>float</code> data type were changed to the <code>CGFloat</code> data type.           |
| 2005-11-09 | Added that Quartz retains the <code>CGFunction</code> object passed to a shading function.                      |
| 2005-04-29 | Revised introduction and added a few sentences to two functions.  |
|            | See <a href="#">CGShadingCreateAxial</a> (page 6) and <a href="#">CGShadingCreateRadial</a> (page 7).           |
| 2004-02-26 | First version of this document. An earlier version of this information appeared in <i>Quartz 2D Reference</i> . |

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