
Screen Saver Framework Reference

User Experience



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Introduction

| | |
|--------------------------------|--|
| Framework | Library/Frameworks/ScreenSaver.framework |
| Header file directories | Library/Frameworks/ScreenSaver.framework/Headers |
| Declared in | ScreenSaverDefaults.h ScreenSaverView.h |

The Screen Saver framework defines the interface for subclasses to interact with the Screen Effects user interface feature. Screen Effects modules need to be written in Objective-C with its user interface implemented using Cocoa.

Screen Saver Framework Classes

The Screen Saver framework consists of the `ScreenSaverView` class, an abstract subclass of `NSView`. `ScreenSaverView` defines an interface for animating screen savers, instantiating small preview versions of the screen saver view (for display in the system preferences, for example), and for providing a configuration sheet to set various properties of the screen saver.

The `ScreenSaverDefaults` class is a subclass of `NSUserDefaults` and provides an interface to the standard user preferences storage system.

In addition, the Screen Saver framework provides a number of functions commonly required by screen saver applications including producing random values and centering rectangles.

Classes

ScreenSaverDefaults Class Reference

| | |
|----------------------|--|
| Inherits from | NSUserDefaults : NSObject |
| Conforms to | NSObject (NSObject) |
| Framework | Library/Frameworks/ScreenSaver.framework |
| Availability | Available in Mac OS X v10.0 and later. |
| Declared in | ScreenSaver/ScreenSaverDefaults.h |

Overview

ScreenSaverDefaults defines a set of methods for saving and restoring user defaults for screen savers.

Because screen savers are packaged as bundles and loaded by several different applications, it is not possible to use NSUserDefaults to store user preferences for them. ScreenSaverDefaults adds the method [defaultsForModuleWithName:](#) (page 9) to get an instance corresponding to a particular module name. Screen savers should typically use their bundle identifier as the module name. Once you have an instance of screen saver defaults, you can use the normal methods of NSUserDefaults to load, store, or modify values.

Tasks

Obtaining the ScreenSaverDefaults Instance

+ [defaultsForModuleWithName:](#) (page 9)

Returns a screen saver defaults instance that reads and writes defaults for the module *moduleName*.

Class Methods

defaultsForModuleWithName:

Returns a screen saver defaults instance that reads and writes defaults for the module *moduleName*.

```
+ (id)defaultsForModuleWithName:(NSString *)moduleName
```

Availability

Available in Mac OS X v10.0 and later.

Declared In

ScreenSaverDefaults.h

ScreenSaverView Class Reference

| | |
|----------------------------|---|
| Inherits from | NSView : NSResponder : NSObject |
| Conforms to | NSAnimatablePropertyContainer (NSView) NSCoding (NSResponder) NSObject (NSObject) |
| Framework | Library/Frameworks/ScreenSaver.framework |
| Availability | Available in Mac OS X v10.0 and later. |
| Declared in | ScreenSaver/ScreenSaverView.h |
| Related sample code | OpenGL Screensaver |

Overview

ScreenSaverView is an abstract class that defines the interface for subclasses to interact with the screen saver infrastructure.

Screen savers are subclasses of ScreenSaverView, packaged up in bundles and loaded by the screen saver application. (These bundles have a suffix of `.saver` and are located in the `Library/Screen Savers` directories of the various file system domains. See *File System Overview* for information about domains.) ScreenSaverView defines an interface for animating screen savers, instantiating small preview versions of the screen saver view (for display in the system preferences, for example), and for providing a configuration sheet to set various properties of the screen saver. In addition, subclasses can set the animation interval, the backing store of their window, and how the screen transitions to the animation.

There are two main ways to do drawing in a screen saver. You can either do your drawing in the normal NSView `drawRect:` (page 15) method, or you can do your drawing in ScreenSaverView's `animateOneFrame` (page 13) method. If you do drawing in `drawRect:` (page 15), you should call `setNeedsDisplay:` with an argument of YES in `animateOneFrame`.

Tasks

Initializing a ScreenSaverView

- `initWithFrame:` (page 15)
Calls `initWithFrame:isPreview:` (page 16) with an argument of NO.

- `initWithFrame:isPreview:` (page 16)
Initializes a newly allocated `ScreenSaverView` with `frame` as its frame rectangle, and sets the value returned by `isPreview` (page 16) to `isPreview`.

Getting the Preferred Window Behavior

- + `backingStoreType` (page 13)
Returns the desired backing store for windows in which the screen saver view will be instantiated.
- + `performGammaFade` (page 13)
Indicates whether the screen saver application should perform a gradual screen fade when it starts and stops the animation.

Setting and Getting the Animation Time Interval

- `animationTimeInterval` (page 14)
Returns the minimum time between animation frames of the screen saver.
- `setAnimationTimeInterval:` (page 17)
Sets the time interval between animation frames.

Animating the ScreenSaverView

- `startAnimation` (page 17)
Activates the periodic timer that animates the screen saver.
- `animateOneFrame` (page 13)
Advances the screen saver's animation by a single frame.
- `stopAnimation` (page 17)
Deactivates the timer that advances the animation.
- `isAnimating` (page 16)
Returns YES if the screen saver is currently animating, NO otherwise.

Drawing the ScreenSaverView

- `drawRect:` (page 15)
Draws the screen saver view.
- `isPreview` (page 16)
Returns YES if the screen saver view was created in a smaller size to be used as a preview, NO if it was created full-screen for use as a screen saver.

Accessing the Configuration Sheet

- `hasConfigureSheet` (page 15)
Returns whether the screen saver has an associated configuration sheet.

- [configureSheet](#) (page 14)

Returns the window containing all of the controls to be used for configuring the screen saver.

Class Methods

backingStoreType

Returns the desired backing store for windows in which the screen saver view will be instantiated.

+ (NSBackingStoreType)backingStoreType

Discussion

Subclasses should override this method to return the desired backing store. The default is `NSBackingStoreBuffered`.

Availability

Available in Mac OS X v10.0 and later.

Declared In

ScreenSaverView.h

performGammaFade

Indicates whether the screen saver application should perform a gradual screen fade when it starts and stops the animation.

+ (BOOL)performGammaFade

Discussion

This class method allows the screen saver view to select how the desktop visibly transitions to the screen saver view. If this method returns `YES`, the screen will gradually darken before the animation begins. If it returns `NO`, the transition will be immediate. The latter behavior is more appropriate if the screen saver animates a screen shot of the desktop, as is the case for optical lens effects. The default is `YES`.

Availability

Available in Mac OS X v10.0 and later.

Declared In

ScreenSaverView.h

Instance Methods

animateOneFrame

Advances the screen saver's animation by a single frame.

- (void)animateOneFrame

Discussion

This method is called each time the timer animating the screen saver fires. The time between calls to this method is always at least [animationTimeInterval](#) (page 14). It is guaranteed that the focus is locked when this method is called, so subclasses may do drawing in this method. The subclass can also let [drawRect:](#) (page 15) perform the drawing, in which case `animateOneFrame` needs to call `setNeedsDisplay:` with an argument of YES. The default implementation does nothing.

Availability

Available in Mac OS X v10.0 and later.

See Also

- [drawRect:](#) (page 15)

Related Sample Code

OpenGL Screensaver

Declared In

ScreenSaverView.h

animationTimeInterval

Returns the minimum time between animation frames of the screen saver.

- (NSTimeInterval)animationTimeInterval

Availability

Available in Mac OS X v10.0 and later.

See Also

- [setAnimationTimeInterval:](#) (page 17)

Declared In

ScreenSaverView.h

configureSheet

Returns the window containing all of the controls to be used for configuring the screen saver.

- (NSWindow *)configureSheet

Discussion

This window will be run as a sheet, so it must include buttons that allow the user to end the modal session in which the sheet runs. When the user dismisses the sheet, the controller in charge of the sheet must end the document modal session by calling `NSApplication's endSheet:` with the sheet's window as the argument.

Availability

Available in Mac OS X v10.0 and later.

See Also

- [hasConfigureSheet](#) (page 15)

Related Sample Code

OpenGL Screensaver

Declared In

ScreenSaverView.h

drawRect:

Draws the screen saver view.

```
- (void)drawRect:(NSRect)rect
```

Discussion

ScreenSaverView implements `drawRect:` to draw a black background. Subclasses can do their drawing here or in [animateOneFrame](#) (page 13).

Availability

Available in Mac OS X v10.0 and later.

See Also

- [animateOneFrame](#) (page 13)
- [startAnimation](#) (page 17)
- [stopAnimation](#) (page 17)

Declared In

ScreenSaverView.h

hasConfigureSheet

Returns whether the screen saver has an associated configuration sheet.

```
- (BOOL)hasConfigureSheet
```

Discussion

Subclasses that provide configure sheets as part of their bundle should override this method to return YES.

Availability

Available in Mac OS X v10.0 and later.

See Also

- [configureSheet](#) (page 14)

Related Sample Code

OpenGL Screensaver

Declared In

ScreenSaverView.h

initWithFrame:Calls [initWithFrame:isPreview:](#) (page 16) with an argument of NO.

```
- (id)initWithFrame:(NSRect)frame
```

Availability

Available in Mac OS X v10.0 and later.

Declared In

ScreenSaverView.h

initWithFrame:isPreview:

Initializes a newly allocated `ScreenSaverView` with *frame* as its frame rectangle, and sets the value returned by `isPreview` (page 16) to *isPreview*.

```
- (id)initWithFrame:(NSRect)frame isPreview:(BOOL)isPreview
```

Discussion

The screen saver application will install the new view object into the view hierarchy of an `NSWindow` before the animation begins. This method is the designated initializer for the `ScreenSaverView` class. Returns `self`.

Availability

Available in Mac OS X v10.0 and later.

See Also

- [initWithFrame:](#) (page 15)

Declared In

ScreenSaverView.h

isAnimating

Returns YES if the screen saver is currently animating, NO otherwise.

```
- (BOOL)isAnimating
```

Availability

Available in Mac OS X v10.0 and later.

See Also

- [startAnimation](#) (page 17)

- [stopAnimation](#) (page 17)

Declared In

ScreenSaverView.h

isPreview

Returns YES if the screen saver view was created in a smaller size to be used as a preview, NO if it was created full-screen for use as a screen saver.

```
- (BOOL)isPreview
```

Discussion

Subclasses can use the return value of `isPreview` to determine if they should change their drawing parameters to something more suitable for display in a smaller frame.

Availability

Available in Mac OS X v10.0 and later.

Declared In

ScreenSaverView.h

setAnimationTimeInterval:

Sets the time interval between animation frames.

```
- (void)setAnimationTimeInterval:(NSTimeInterval)timeInterval
```

Discussion

Subclasses with particular requirements for time between animation frames should call this method to set the animation rate to a reasonable value.

Availability

Available in Mac OS X v10.0 and later.

See Also

- [animationTimeInterval](#) (page 14)

Declared In

ScreenSaverView.h

startAnimation

Activates the periodic timer that animates the screen saver.

```
- (void)startAnimation
```

Discussion

This method is called when the screen saver view should begin animating. Subclasses can implement this method to set up initial state or allocate expensive resources that should be loaded lazily. Subclasses must call the inherited implementation.

Availability

Available in Mac OS X v10.0 and later.

See Also

- [stopAnimation](#) (page 17)

Related Sample Code

OpenGL Screensaver

Declared In

ScreenSaverView.h

stopAnimation

Deactivates the timer that advances the animation.

- (void)stopAnimation

Discussion

This method is called when the screen saver view should stop animating. Subclasses can implement this method to unload expensive resources or reset state to original parameters. Subclasses must call the inherited implementation.

Availability

Available in Mac OS X v10.0 and later.

See Also

- [startAnimation](#) (page 17)

Related Sample Code

OpenGL Screensaver

Declared In

ScreenSaverView.h

Functions

Screen Saver Functions Reference

Framework: ScreenSaver/ScreenSaver.h

Overview

This chapter describes functions and function-like macros available in the Screen Saver framework.

Several of the functions produce random values. These make use of the C random number generator, `random()`, which the screen saver framework will automatically seed.

Functions by Task

Random Numbers

[SSRandomIntBetween](#) (page 22)

This function returns a random integer value.

[SSRandomFloatBetween](#) (page 22)

This function returns a random float value.

[SSRandomPointForSizeWithinRect](#) (page 22)

This function returns a random point.

Rectangles

[SSCenteredRectInRect](#) (page 21)

This function returns a rectangle.

Functions

SSCenteredRectInRect

This function returns a rectangle.

```
static NSRect SSCenteredRectInRect (
    NSRect innerRect,
    NSRect outerRect
);
```

Discussion

Returns a rectangle, based on centering *innerRect* within *outerRect*.

Availability

Available in Mac OS X v10.0 and later.

Declared In

ScreenSaverView.h

SSRandomFloatBetween

This function returns a random float value.

```
static float SSRandomFloatBetween (
    float a,
    float b
);
```

Discussion

Returns a random float value between the values *a* and *b*, inclusive.

Availability

Available in Mac OS X v10.0 and later.

Declared In

ScreenSaverView.h

SSRandomIntBetween

This function returns a random integer value.

```
static int SSRandomIntBetween (
    int a,
    int b
);
```

Discussion

Returns a random integer value between the values *a* and *b*, inclusive.

Availability

Available in Mac OS X v10.0 and later.

Declared In

ScreenSaverView.h

SSRandomPointForSizeWithinRect

This function returns a random point.

```
static NSPoint SSRandomPointForSizeWithinRect (  
    NSSize size,  
    NSRect rect  
);
```

Discussion

Returns a random point within *rect*, constrained within $(rect.size - size)$ from *rect*'s origin.

Availability

Available in Mac OS X v10.0 and later.

Declared In

ScreenSaverView.h

Document Revision History

This table describes the changes to *Screen Saver Framework Reference*.

| Date | Notes |
|------------|--|
| 2006-05-23 | First publication of this content as a collection of separate documents. |
| | First publication of this content as a collection of separate documents. |

REVISION HISTORY

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