QCPlugIn Class Reference

Graphics & Animation: 2D Drawing

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QCPlugIn Class Reference

Inherits from	NSObject
Conforms to	NSObject (NSObject)
Framework	/System/Library/Frameworks/Quartz.framework/Frameworks/QuartzComposer.framework
Availability	Available in Mac OS X v10.5 and later.
Declared in	QCPlugIn.h QCPlugInViewController.h
Companion guides	Quartz Composer Custom Patch Programming Guide Quartz Composer Programming Guide
Related sample code	Quartz Composer ImageExporter

Overview

The `QCPlugIn` class provides the base class to subclass for writing custom Quartz Composer patches. You implement a custom patch by subclassing `QCPlugIn`, overriding the appropriate methods, packaging the code as an `NSBundle` object, and installing the bundle in the appropriate location. A bundle can contain more than one subclass of `QCPlugIn`, allowing you to provide a suite of custom patches in one bundle. *Quartz Composer Custom Patch Programming Guide* provides detailed instructions on how to create and package a custom patch. *QCPlugIn Class Reference* supplements the information in the programming guide.

The methods related to the executing the custom patch (called when the Quartz Composer engine is rendering) are passed an opaque object that conforms to the `QCPlugInContext Protocol` protocol. This object represents the execution context of the `QCPlugIn` object. You should not retain the execution context or use it outside of the scope of the execution method that it is passed to.

Tasks

Defining the Characteristics of a Custom Patch

`+ executionMode` (page 9)
Returns the execution mode of the custom patch.

`+ timeMode` (page 11)
Returns the time mode for the custom patch.

Executing a Custom Patch

- `execute:atTime:withArguments:` (page 15)
  Performs the processing or rendering tasks appropriate for the custom patch.

Performing Custom Tasks During Execution

- `startExecution:` (page 18)
  Allows you to perform custom setup tasks before the Quartz Composer engine starts rendering.
- `enableExecution:` (page 15)
  Allows you to perform custom tasks when the execution of the `QCPlugIn` object is resumed.
- `disableExecution:` (page 14)
  Allows you to perform custom tasks when the execution of the `QCPlugIn` object is paused.
- `stopExecution:` (page 19)
  Allows you to perform custom tasks when the `QCPlugIn` object stops executing.

Defining Patch and Property Port Attributes

+ `attributes` (page 7)
  Returns a dictionary that contains strings for the user interface that describe the custom patch.
+ `attributesForPropertyPortWithKey:` (page 8)
  Returns a dictionary that contains strings for the user interface that describe the optional attributes for ports created from properties.

Defining Internal Settings

- `createViewController` (page 13)
  Creates and returns a view controller for the Settings pane of a custom patch.
+ `plugInKeys` (page 10)
  Returns the keys for the internal settings of a custom patch.

Supporting Saving and Retrieving Internal Settings

- `serializedValueForKey:` (page 17)
  Provides custom serialization for patch internal settings that do not comply to the `NSCoding` protocol.
- `setSerializedValue:forKey:` (page 17)
  Provides custom deserialization for patch internal settings that were previously serialized using the method `serializedValueForKey:` (page 17).

Adding Ports Dynamically

- `addInputPortWithType:forKey:withAttributes:` (page 12)
  Adds an input port of the specified type and associates a key and attributes with the port.

- `removeInputPortForKey:` (page 16)
  Removes the input port for a given key.
- `addOutputPortWithType:forKey:withAttributes:` (page 12)
  Adds an output port of the specified type and associates a key and attributes with the port.
- `removeOutputPortForKey:` (page 16)
  Removes the output port for a given key.

Getting and Setting Port Values

- `didValueForInputKeyChange:` (page 14)
  Returns whether the input port value changed since the last execution of the custom patch.
- `valueForInputKey:` (page 19)
  Returns the current value for an input port.
- `setValue:forOutputKey:` (page 18)
  Sets the value of an output port.

Loading Bundle and Custom Patches Manually

+ `loadPlugInAtPath:` (page 9)
  Loads a Quartz Composer plug-in bundle from the specified path.
+ `registerPlugInClass:` (page 11)
  Registers a `QCPlugIn` subclass.

Ordering Property Ports

+ `sortedPropertyPortKeys` (page 11)
  Returns and array of property port keys in the order you want them to appear in the user interface.

Class Methods

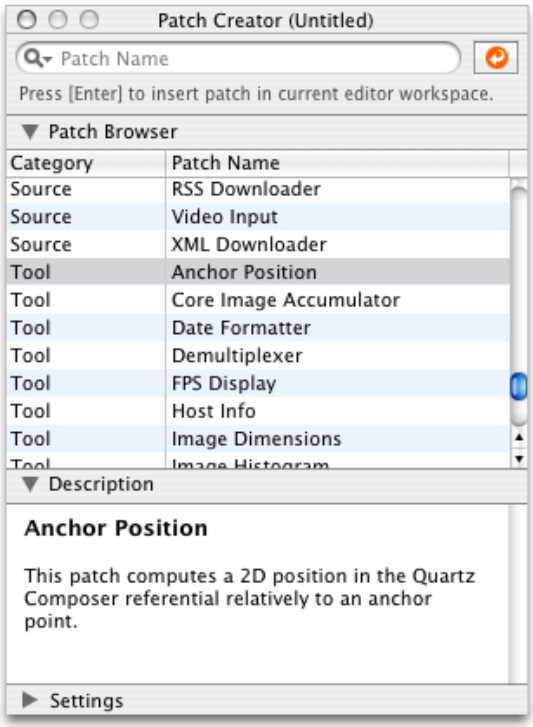
attributes

Returns a dictionary that contains strings for the user interface that describe the custom patch.

```
+ (NSDictionary*) attributes
```

Return Value
The dictionary can contain one or more of these keys along with the appropriate string: `QCPlugInAttributeNameKey` (page 20), `QCPlugInAttributeDescriptionKey` (page 20), and `QQCPlugInAttributeCopyrightKey` (page 20).

Discussion
It's recommended that you implement this method to enhance the experience of those who use your custom patch. The attribute name string that you provide is displayed in the Quartz Composer editor window when the custom patch name is selected in the Patch Creator (see figure). The attribute description key is displayed in the Information pane of the inspector for the custom patch.



Availability
Available in Mac OS X v10.5 and later.

See Also
`+ attributesForPropertyPortWithKey:` (page 8)

Related Sample Code
Quartz Composer ImageExporter

Declared In
`QCPlugIn.h`

attributesForPropertyPortWithKey:

Returns a dictionary that contains strings for the user interface that describe the optional attributes for ports created from properties.

```
+ (NSDictionary*) attributesForPropertyPortWithKey:(NSString*)key
```

Parameters

key

The name of the property.

Return Value
A dictionary that contains key-value pairs for the port's attributes. The keys must be one or more of the constants defined in "Input and Output Port Attributes" (page 20).

Discussion
It's recommended that you implement this method to enhance the experience of those who use your custom patch. The attributes appear in a help tag when the user hovers a pointer over the property port on your custom patch. At a minimum, you should provide a user-readable name for the port. It might also be helpful to provide default, minimum, and maximum values for the port.

Availability
Available in Mac OS X v10.5 and later.

See Also
`+ attributes` (page 7)

Declared In
`QCPlugIn.h`

executionMode

Returns the execution mode of the custom patch.

```
+ (QCPlugInExecutionMode) executionMode
```

Return Value
The execution mode of the custom patch. See "`Execution Modes`" (page 24) for the constants you can return.

Discussion
You must implement this method to define whether your custom patch is a provider, a processor, or a consumer.

Availability
Available in Mac OS X v10.5 and later.

Related Sample Code
Quartz Composer ImageExporter

Declared In
`QCPlugIn.h`

loadPlugInAtPath:

Loads a Quartz Composer plug-in bundle from the specified path.

```
+ (BOOL) loadPlugInAtPath:(NSString*)path
```

Parameters
path
The location of the bundle.

Return Value
`YES` if successful.

Discussion
Call this method only if you need to load a plug-in bundle from a nonstandard location. Typically you don't need to call this method because Quartz Composer automatically loads bundles that you install in one of the following locations:

- `/Library/Graphics/Quartz Composer Plug-Ins`
- `~/Library/Graphics/Quartz Composer Plug-Ins`

This method does nothing if the bundle is already loaded. (This method does not load in all environments. Web Kit, for example, cannot load custom patches.)

The bundle can contain more than one `QCPlugIn` subclass. After the bundle is loaded, each `QCPlugIn` subclass appears as a patch in the Quartz Composer patch library.

Availability
Available in Mac OS X v10.5 and later.

Declared In
`QCPlugIn.h`

plugInKeys

Returns the keys for the internal settings of a custom patch.

```
+ (NSArray*) plugInKeys
```

Return Value
An array of keys used for key-value coding (KVC) of the internal settings.

Discussion
You must override this method if your patch provides a Settings pane. This keys are used for automatic serialization of the internal settings and are also used by the `QCPlugInViewController` instance for the Settings pane. The implementation is straightforward; the keys are strings that represent the instance variables used for the Settings pane. For example, the `plugInKeys` method for these instance variables:

```
@property(ivar, byref) NSColor * systemColor;
@property(ivar, byref) NSConfiguration * systemConfiguration;
```

are:

```
+ (NSArray*) plugInKeys
{
    return [NSArray arrayWithObjects: @"systemColor",
                                      @"systemConfiguration",
                                      nil];
}
```

Availability
Available in Mac OS X v10.5 and later.

See Also
`- createViewController` (page 13)

Declared In
`QCPlugIn.h`

registerPlugInClass:

Registers a `QCPlugIn` subclass.

```
+ (void) registerPlugInClass:(Class)aClass
```

Parameters

aClass

The `QCPlugIn` subclass.

Discussion
You call this method only if the code for your custom patch is mixed with your application code, and you plan only to use the custom patch from within your application.

Availability
Available in Mac OS X v10.5 and later.

Declared In
`QCPlugIn.h`

sortedPropertyPortKeys

Returns and array of property port keys in the order you want them to appear in the user interface.

```
+ (NSArray*) sortedPropertyPortKeys;
```

Return Value
The property port keys in the order you want them to appear in the user interface.

Discussion
Override this method to specify an optional ordering for property based ports in the user interface.

Availability
Available in Mac OS X v10.5 and later.

Declared In
`QCPlugIn.h`

timeMode

Returns the time mode for the custom patch.

```
+ (QCPlugInTimeMode) timeMode
```

Return Value
The time mode of the custom patch. See "Time Modes" (page 25) for the constants you can return.

Discussion
You must implement this method to define whether you custom patch depends on time, doesn't depend on time, or needs time to idle.

Availability
Available in Mac OS X v10.5 and later.

Related Sample Code
Quartz Composer ImageExporter

Declared In
`QCPlugIn.h`

Instance Methods

addInputPortWithType:forKey:withAttributes:

Adds an input port of the specified type and associates a key and attributes with the port.

```
- (void) addInputPortWithType:(NSString*)type forKey:(NSString*)key
    withAttributes:(NSDictionary*)attributes
```

Parameters

type
The port type. See "Port Input and Output Types" (page 22).

key
The key to associate with the port.

attributes
A dictionary of attributes for the port. See "Input and Output Port Attributes" (page 20). Although the dictionary is optional, it's recommended that provide attributes to enhance the experience of those who use your custom patch. The attributes appear in a help tag when the user hovers a pointer over the property port on your custom patch. (See `attributesForPropertyPortWithKey:` (page 8).) Pass `nil` if you do not want to provide attributes.

Discussion
This method throws an exception if called from within the `execute:atTime:withArguments:` (page 15) method or if there's already an input or output port with that key.

Availability
Available in Mac OS X v10.5 and later.

See Also
`- removeInputPortForKey:` (page 16)

Declared In
`QCPlugIn.h`

addOutputPortWithType:forKey:withAttributes:

Adds an output port of the specified type and associates a key and attributes with the port.

```
- (void) addOutputPortWithType:(NSString*)type forKey:(NSString*)key
    withAttributes:(NSDictionary*)attributes
```

Parameters

type

The port type. See "Port Input and Output Types" (page 22).

key

The key to associate with the port.

attributes

A dictionary of attributes for the port. See "Input and Output Port Attributes" (page 20). Although the dictionary is optional, it's recommended that provide attributes to enhance the experience of those who use your custom patch. The attributes appear in a help tag when the user hovers a pointer over the property port on your custom patch. (See `attributesForPropertyPortWithKey:` (page 8).) Pass `nil` if you do not want to provide attributes.

Discussion

This method throws an exception if called from within the `execute:atTime:withArguments:` (page 15) method or if there is already an output port with that key.

Availability

Available in Mac OS X v10.5 and later.

See Also

`- removeOutputPortForKey:` (page 16)

Declared In

`QCPlugIn.h`

createViewController

Creates and returns a view controller for the Settings pane of a custom patch.

```
- (QCPlugInViewController*) createViewController
```

Return Value

A view controller for the custom patch. Quartz Composer releases the controller when it is no longer needed. If necessary, you can return a subclass of `QCPlugInViewController`, but this it not typically done.

Discussion

This extension to the `QCPlugInViewController` class provides user-interface support for the Settings pane of the inspector for a custom patch. You must override this method if your custom patch provides a Settings pane. The `QCPlugInViewController` object acts as a controller for Cocoa bindings between the custom patch instance (the model) and the `NSView` that contains the controls. It loads the nib file from the bundle.

The implementation is straightforward. You allocate a `QCPlugInViewController` object, initialize it, and provide the name of the nib file that contains the user interface for the Settings pane.

Note that this method follows the Core Foundation "create" rule. See the ownership policy in *Memory Management Programming Guide for Core Foundation*.

For example, if the nib file name that contains the settings pane is `MySettingsPane.nib`, the implementation is:

```
- (QCPlugInViewController *) createViewController
{
    return [[QCPlugInViewController alloc] initWithPlugIn:self
```

```
                                                viewNibName:@"MySettingsPane"];
}
```

Availability
Available in Mac OS X v10.5 and later.

See Also
`+ plugInKeys` (page 10)

Declared In
`QCPlugInViewController.h`

didValueForInputKeyChange:

Returns whether the input port value changed since the last execution of the custom patch.

```
- (BOOL) didValueForInputKeyChange:(NSString*)key
```

Parameters

key

The key for the input port whose value you want to check.

Return Value
`YES` if the value on the input port changed since the last time the `execute:atTime:withArguments:` (page 15) method was called; always returns `NO` if called outside of the `execute:atTime:withArguments:` method.

Availability
Available in Mac OS X v10.5 and later.

See Also
`- valueForInputKey:` (page 19)

Declared In
`QCPlugIn.h`

disableExecution:

Allows you to perform custom tasks when the execution of the `QCPlugIn` object is paused.

```
- (void) disableExecution:(id<QCPlugInContext>)context
```

Parameters

context

An opaque object , conforming to the `QCPlugInContext Protocol` protocol, that represents the execution context of the `QCPlugIn` object. Do not retain this object or use it outside of the scope of this method.

Discussion
The Quartz Composer engine calls this method when results are no longer being pulled from the custom patch. You can optionally override this execution method to perform custom tasks at that time.

Availability
Available in Mac OS X v10.5 and later.

See Also
- enableExecution: (page 15)

Declared In
QCPlugIn.h

enableExecution:

Allows you to perform custom tasks when the execution of the QCPlugIn object is resumed.

```
- (void) enableExecution:(id<QCPlugInContext>)context
```

Parameters

context

An opaque object , conforming to the QCPlugInContext Protocol protocol, that represents the execution context of the QCPlugIn object. Do not retain this object or use it outside of the scope of this method.

Discussion
The Quartz Composer engine calls this method when results start to be pulled from the custom patch. You can optionally override this execution method to perform custom tasks at that time.

Availability
Available in Mac OS X v10.5 and later.

See Also
- disableExecution: (page 14)

Declared In
QCPlugIn.h

execute:atTime:withArguments:

Performs the processing or rendering tasks appropriate for the custom patch.

```
- (BOOL) execute:(id<QCPlugInContext>)context atTime:(NSTimeInterval)time
    withArguments:(NSDictionary*)arguments
```

Parameters

context

An opaque object , conforming to the QCPlugInContext Protocol protocol, that represents the execution context of the QCPlugIn object. Do not retain this object or use it outside of the scope of this method.

time

The execution interval.

arguments

A dictionary of arguments that can be used during execution. See "Execution Arguments" (page 24).

Return Value
NO indicates the custom patch was not able to execute successfully. In this case, the Quartz Composer engine stops rendering the current frame.

Discussion
The Quartz Composer engine calls this method each time your custom patch needs to execute. You must implement this method. The method should perform whatever tasks are appropriate for the custom patch, such as:

- reading values from the input ports
- computing output values
- updating the values on the output ports
- rendering to the execution context

For example implementations of this method, see *Quartz Composer Custom Patch Programming Guide*.

Availability
Available in Mac OS X v10.5 and later.

Declared In
`QCPlugIn.h`

removeInputPortForKey:

Removes the input port for a given key.

```
- (void) removeInputPortForKey:(NSString*)key
```

Parameters
key
The key associated with the port that you want to remove.

Discussion
This method throws an exception if from within the `execute:atTime:withArguments:` (page 15) method, if there is not an input port with that key, or if the port is created from a property.

Availability
Available in Mac OS X v10.5 and later.

See Also
`- addInputPortWithType:forKey:withAttributes:` (page 12)

Declared In
`QCPlugIn.h`

removeOutputPortForKey:

Removes the output port for a given key.

```
- (void) removeOutputPortForKey:(NSString*)key
```

Parameters
key
The key associated with the port that you want to remove.

Discussion
This method throws an exception if called from within the `execute:atTime:withArguments:` (page 15) method, if there is not an output port with that key, or if the port is created from a property.

Availability
Available in Mac OS X v10.5 and later.

See Also
`- addOutputPortWithType:forKey:withAttributes:` (page 12)

Declared In
`QCPlugIn.h`

serializedValueForKey:

Provides custom serialization for patch internal settings that do not comply to the `NSCoding` protocol.

```
- (id) serializedValueForKey:(NSString*)key
```

Parameters

key
The key for the value to retrieve.

Return Value
Either `nil` or a value that's compliant with property lists: `NSString`, `NSNumber`, `NSDate`, `NSData`, `NSArray`, or `NSDictionary`.

Discussion
If your patch has internal settings that do not conform to the `NSCoding` protocol, you must implement this method.

Availability
Available in Mac OS X v10.5 and later.

See Also
`- setSerializedValue:forKey:` (page 17)

Declared In
`QCPlugIn.h`

setSerializedValue:forKey:

Provides custom deserialization for patch internal settings that were previously serialized using the method `serializedValueForKey:` (page 17).

```
- (void) setSerializedValue:(id)serializedValue forKey:(NSString*)key
```

Parameters

serializedValue
The value to deserialize.

key
The key for the value to deserialize.

Discussion
If your patch has internal settings that do not conform to the `NSCoding` protocol, you must implement this method. After you deserialize the value, you need to call `[self set:value forKey:key]` to set the corresponding internal setting of the custom patch instance to the deserialized value.

Availability
Available in Mac OS X v10.5 and later.

Declared In
`QCPlugIn.h`

setValue:forOutputKey:

Sets the value of an output port.

```
- (BOOL) setValue:(id)value forOutputKey:(NSString*)key
```

Parameters

key

The key associated with the output port whose value you want to set.

Return Value
`YES` if successful; `NO` if called outside of the `execute:atTime:withArguments:` (page 15) method.

Discussion
You call this method from within your `execute:atTime:withArguments:` (page 15) method to set the output values of your custom patch.

Availability
Available in Mac OS X v10.5 and later.

See Also
- `valueForInputKey:` (page 19)
- `didValueForInputKeyChange:` (page 14)

Declared In
`QCPlugIn.h`

startExecution:

Allows you to perform custom setup tasks before the Quartz Composer engine starts rendering.

```
- (BOOL) startExecution:(id<QCPlugInContext>)context
```

Parameters

context

An opaque object , conforming to the `QCPlugInContext Protocol` protocol, that represents the execution context of the `QCPlugIn` object. Do not retain this object or use it outside of the scope of this method.

Return Value
`NO` indicates a fatal error occurred and prevents the Quartz Composer engine from starting.

Discussion
The Quartz Composer engine calls this method when your custom patch starts to render. You can optionally override this execution method to perform setup tasks.

Availability
Available in Mac OS X v10.5 and later.

See Also
`- stopExecution:` (page 19)

Declared In
`QCPlugIn.h`

stopExecution:

Allows you to perform custom tasks when the `QCPlugIn` object stops executing.

```
- (void) stopExecution:(id<QCPlugInContext>)context
```

Parameters

context

An opaque object , conforming to the `QCPlugInContext Protocol` protocol, that represents the execution context of the `QCPlugIn` object. Do not retain this object or use it outside of the scope of this method.

Discussion
The Quartz Composer engine calls this method when it stops executing. You can optionally override this execution method to perform cleanup tasks.

Availability
Available in Mac OS X v10.5 and later.

See Also
`- startExecution:` (page 18)

Declared In
`QCPlugIn.h`

valueForInputKey:

Returns the current value for an input port.

```
- (id) valueForInputKey:(NSString*)key
```

Parameters

key

The key for the input port you want to check.

Return Value
The value associated with the key or `nil` if called outside of the `execute:atTime:withArguments:` (page 15) method.

Discussion
You call this method from within your `execute:atTime:withArguments:` (page 15) method to retrieve the input values of your custom patch.

Availability
Available in Mac OS X v10.5 and later.

See Also
- `setValue:forOutputKey:` (page 18)
- `didValueForInputKeyChange:` (page 14)

Declared In
`QCPlugIn.h`

Constants

Patch Attributes

Attributes for custom patches.

```
extern NSString* const QCPlugInAttributeNameKey;
extern NSString* const QCPlugInAttributeDescriptionKey;
extern NSString* const QCPlugInAttributeCopyrightKey;
```

Constants

`QCPlugInAttributeNameKey`
The key for the custom patch name. The associated value is an `NSString` object.
Available in Mac OS X v10.5 and later.
Declared in `QCPlugIn.h`.

`QCPlugInAttributeDescriptionKey`
The key for the custom patch description. The associated value is an `NSString` object.
Available in Mac OS X v10.5 and later.
Declared in `QCPlugIn.h`.

`QQCPlugInAttributeCopyrightKey`
The key for the custom patch copyright information. The associated value is an `NSString` object.

Declared In
`QCPlugIn.h`

Input and Output Port Attributes

Attributes for input and output ports.

```
extern NSString* const QCPortAttributeTypeKey;
extern NSString* const QCPortAttributeNameKey;
extern NSString* const QCPortAttributeDefaultValueKey;
extern NSString* const QCPortAttributeMinimumValueKey;
extern NSString* const QCPortAttributeMaximumValueKey;
extern NSString* const QCPortAttributeDefaultValueKey;
extern NSString* const QCPortAttributeMenuItemsKey;
```

Constants

`QCPortAttributeTypeKey`

The key for the port type. The associated value can be of any of the following constants: `QCPortTypeBoolean` (page 22), `QCPortTypeIndex` (page 22), `QCPortTypeNumber` (page 22), `QCPortTypeString` (page 23), `QCPortTypeColor` (page 23), `QCPortTypeImage` (page 23), or `QCPortTypeStructure` (page 23).

Available in Mac OS X v10.4 and later.

Declared in `QCPlugIn.h`.

`QCPortAttributeNameKey`

The key for the port name. The associated value is an `NSString` object.

Available in Mac OS X v10.4 and later.

Declared in `QCPlugIn.h`.

`QCPortAttributeMinimumValueKey`

The key for the port minimum value. The associated value is an `NSNumber` object that specifies the minimum numerical value accepted by the port.

Available in Mac OS X v10.4 and later.

Declared in `QCPlugIn.h`.

`QCPortAttributeMaximumValueKey`

The key for the port maximum value. The associated value is an `NSNumber` object that specifies the maximum numerical value accepted by the port.

Available in Mac OS X v10.4 and later.

Declared in `QCPlugIn.h`.

`QCPortAttributeDefaultValueKey`

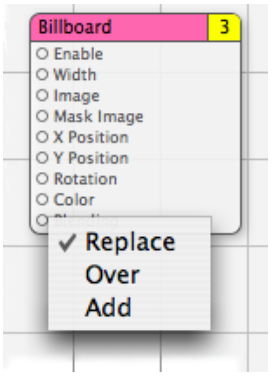
The key for the port default value. You can use this key only for value ports (Boolean, Index, Number, Color and String).

Available in Mac OS X v10.5 and later.

Declared in `QCPlugIn.h`.

`QCPortAttributeMenuItemsKey`

The key for the menu items. The associated value is an array of strings that are displayed in the user interface as a pop-up menu when the user double-clicks a port, as shown for the Blending input port



of the Billboard patch. You can use this key only for an index port.

Available in Mac OS X v10.5 and later.

Declared in `QCPlugIn.h`.

Declared In

`QCPlugIn.h`

Port Input and Output Types

Data types for input and output ports.

```
extern NSString* const QCPortTypeBoolean;
extern NSString* const QCPortTypeIndex;
extern NSString* const QCPortTypeNumber;
extern NSString* const QCPortTypeString;
extern NSString* const QCPortTypeColor;
extern NSString* const QCPortTypeImage;
extern NSString* const QCPortTypeStructure;
```

Constants

`QCPortTypeBoolean`

The port type for a Boolean value. The associated value can be an `NSNumber` object or any object that responds to the `-intValue`, `-floatValue`, or `-doubleValue` methods.

Available in Mac OS X v10.4 and later.

Declared in `QCPlugIn.h`.

`QCPortTypeIndex`

The port type for an index value. The associated value can be an `NSNumber` object or any object that responds to the `-intValue`, `-floatValue`, or `-doubleValue` methods.

Available in Mac OS X v10.4 and later.

Declared in `QCPlugIn.h`.

`QCPortTypeNumber`

The port type for a number value. The associated value can be an `NSNumber` object or any object that responds to the `-intValue`, `-floatValue`, or `-doubleValue` methods.

Available in Mac OS X v10.4 and later.

Declared in `QCPlugIn.h`.

`QCPortTypeString`
The port type for a string. The associated value can be an `NSString` object or any object that responds to the `-stringValue` or `-description` methods.

Available in Mac OS X v10.4 and later.

Declared in `QCPlugIn.h`.

`QCPortTypeColor`
The port type for a color value. The associated value must be an `NSColor` object.

Available in Mac OS X v10.4 and later.

Declared in `QCPlugIn.h`.

`QCPortTypeImage`
The port type for an image. The associated value can be an `NSImage` object or a `CIImage` object.

Available in Mac OS X v10.4 and later.

Declared in `QCPlugIn.h`.

`QCPortTypeStructure`
The port type for an array, dictionary, or other structure, such as an `NSArray` or `NSDictionary` object.

Available in Mac OS X v10.4 and later.

Declared in `QCPlugIn.h`.

Declared In
`QCPlugIn.h`

Pixel Formats

Supported image pixel formats.

```
extern NSString* const QCPlugInPixelFormatARGB8;
extern NSString* const QCPlugInPixelFormatBGRA8;
extern NSString* const QCPlugInPixelFormatRGBAf;
extern NSString* const QCPlugInPixelFormatI8;
extern NSString* const QCPlugInPixelFormatIf;
```

Constants
`QCPlugInPixelFormatARGB8`
An ARGB8 format. The alpha component is stored in the most significant bits of each pixel. Each pixel component is 8 bits. For best performance, use this format on PowerPC-based Macintosh computers, as it represents of the order of the data in memory.

Available in Mac OS X v10.5 and later.

Declared in `QCPlugIn.h`.

`QCPlugInPixelFormatBGRA8`
A BGRA8 format. The alpha component is stored in the least significant bits of each pixel. Each pixel component is 8 bits. For best performance, use this format on Intel-PC-based Macintosh computers, as it represents of the order of the data in memory.

Available in Mac OS X v10.5 and later.

Declared in `QCPlugIn.h`.

`QCPlugInPixelFormatRGBAf`
An RGBAf format. Pixel components are represented as floating-point values.

Available in Mac OS X v10.5 and later.

Declared in `QCPlugIn.h`.

`QCPlugInPixelFormatI8`
An I8 format. Intensity information is represented as an 8-bit value.

Available in Mac OS X v10.5 and later.

Declared in `QCPlugIn.h`.

`QCPlugInPixelFormatIf`
An If format. Intensity information is represented as a floating-point value.

Available in Mac OS X v10.5 and later.

Declared in `QCPlugIn.h`.

Declared In
`QCPlugIn.h`

Execution Arguments

Arguments to the method `execute:atTime:withArguments:` (page 15).

```
extern NSString* const QCPlugInExecutionArgumentEventKey;
extern NSString* const QCPlugInExecutionArgumentMouseLocationKey;
```

Constants
`QCPlugInExecutionArgumentEventKey`
The current `NSEvent` if available.

Available in Mac OS X v10.5 and later.

Declared in `QCPlugIn.h`.

`QCPlugInExecutionArgumentMouseLocationKey`
The current location of the mouse (as an `NSPoint` object stored in an `NSValue` object) in normalized coordinates relative to the OpenGL context viewport ([0,1]x[0,1] with the origin (`0,0`) at the lower-left corner).

Available in Mac OS X v10.5 and later.

Declared in `QCPlugIn.h`.

Declared In
`QCPlugIn.h`

Execution Modes

Execution modes for custom patches.

```
typedef enum {
    kQCPlugInExecutionModeProvider = 1,
    kQCPlugInExecutionModeProcessor,
    kQCPlugInExecutionModeConsumer
} QCPlugInExecutionMode;
```

Constants

`kQCPlugInExecutionModeProvider`

A provider execution mode. The custom patch executes on demand—that is, whenever data is requested of it, but at most once per frame.

Available in Mac OS X v10.5 and later.

Declared in `QCPlugIn.h`.

`kQCPlugInExecutionModeProcessor`

A processor execution mode. The custom patch executes whenever its inputs change or if the time change (assuming it's time-dependent).

Available in Mac OS X v10.5 and later.

Declared in `QCPlugIn.h`.

`kQCPlugInExecutionModeConsumer`

A consumer execution mode. The custom patch always executes assuming the value of its Enable input port is `true`. (The Enable port is automatically added by the system.)

Available in Mac OS X v10.5 and later.

Declared in `QCPlugIn.h`.

Declared In

`QCPlugIn.h`

Time Modes

Time modes for custom patches.

```
typedef enum {
    kQCPlugInTimeModeNone = 0,
    kQCPlugInTimeModeIdle,
    kQCPlugInTimeModeTimeBase
} QCPlugInTimeMode;
```

Constants

`kQCPlugInTimeModeNone`

No time dependency. The custom patch does not depend on time at all. (It does not use the `time` parameter of the `execute:atTime:withArguments:` method.)

Available in Mac OS X v10.5 and later.

Declared in `QCPlugIn.h`.

`kQCPlugInTimeModeIdle`

An idle time dependency. The custom patch does not depend on time but needs the system to execute it periodically. For example if the custom patch connects to a piece of hardware, to ensure that it pulls data from the hardware, you would set the custom patch time dependency to idle time mode. This time mode is typically used with providers.]]

Available in Mac OS X v10.5 and later.

Declared in `QCPlugIn.h`.

`kQCPlugInTimeModeTimeBase`

A time base dependency. The custom patch does depend on time explicitly and has a time base defined by the system. (It uses the `time` parameter of the `execute:atTime:withArguments:` method.)

Available in Mac OS X v10.5 and later.

Declared in `QCPlugIn.h`.

Declared In
`QCPlugIn.h`

Document Revision History

This table describes the changes to *QCPlugIn Class Reference*.

Date	Notes
2008-04-08	Added information about the memory management model used for the create function.
2007-06-26	New document that describes the class used to write custom patches for Quartz Composer.

Document Revision History