API Collection

AXUIElement.h

Overview

See the Overview section above for header-level documentation.

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Assistive applications use the functions defined in this header file to communicate with and control accessible applications running in macOS.

Each accessible user interface element in an application is represented by an AXUIElementRef, which is a CFTypeRef. AXUIElementRefs (like all CFTypeRefs) can be used with all the Core Foundation polymorphic functions, such as <u>CFRetain</u>, <u>CFRelease</u>, and <u>CFEqual(_:_:)</u>.

All functions defined in this header file return `kAXErrorSuccess` on success. If there is some sort of system memory failure, such as the failure to allocate an object, all functions can return k `AXErrorFailure`. In the unlikely event that some process does not fully support the accessibility API, a function can return `kAXErrorNotImplemented`.

In addition, some functions can return the following error codes:

`kAXErrorInvalidUIElement`
    The passed-in AXUIElementRef is invalid. All functions that include an AXUIElementRef parameter can return this error code.

`kAXErrorIllegalArgument`
    At least one of the arguments is illegal (for example, NIL passed in for a pointer).

`kAXErrorCannotComplete`
    There is a problem with messaging (such as when messaging to the server fails or when the accessible application is unresponsive or waiting for user input). All functions that perform messaging can return this error code.

`kAXErrorAPIDisabled`

  The accessibility API is disabled. All functions that perform messaging can return this error code.

For more information on the definition and use of accessibility objects and in macOS accessibility support in general, see Accessibility Programming Guide for OS X.

Included Headers

- `<AvailabilityMacros.h>`

- `<CoreFoundation/CoreFoundation.h>`

- `<ApplicationServices/ApplicationServices.h>`

Topics

Notification API

`func AXObserverAddNotification(AXObserver, AXUIElement, CFString, UnsafeMutableRawPointer?) -> AXError`

  Registers the specified observer to receive notifications from the specified accessibility object.

`func AXObserverCreate(pid_t, AXObserverCallback, UnsafeMutablePointer<AXObserver?>) -> AXError`

  Creates a new observer that can receive notifications from the specified application.

`func AXObserverCreateWithInfoCallback(pid_t, AXObserverCallbackWithInfo, UnsafeMutablePointer<AXObserver?>) -> AXError`

  Creates a new observer that can receive notifications with an information dictionary from the specified application.

`func AXObserverGetRunLoopSource(AXObserver) -> CFRunLoopSource`

  Returns the observer's run loop source.

`func AXObserverGetTypeID() -> CFTypeID`

  Returns the unique type identifier for the AXObserverRef type.

`func AXObserverRemoveNotification(AXObserver, AXUIElement, CFString) -> AXError`

Removes the specified notification from the list of notifications the observer wants to receive from the accessibility object.

Miscellaneous

func **AXIsProcessTrusted**() -> Bool

Returns whether the current process is a trusted accessibility client.

func **AXIsProcessTrustedWithOptions**(CFDictionary?) -> Bool

Returns whether the current process is a trusted accessibility client.

func **AXUIElementCopyActionDescription**(AXUIElement, CFString, Unsafe MutablePointer<CFString?>) -> AXError

Returns a localized description of the specified accessibility object's action.

func **AXUIElementCopyActionNames**(AXUIElement, UnsafeMutable Pointer<CFArray?>) -> AXError

Returns a list of all the actions the specified accessibility object can perform.

func **AXUIElementCopyAttributeNames**(AXUIElement, UnsafeMutable Pointer<CFArray?>) -> AXError

Returns a list of all the attributes supported by the specified accessibility object.

func **AXUIElementCopyAttributeValue**(AXUIElement, CFString, UnsafeMutable Pointer<CFTypeRef?>) -> AXError

Returns the value of an accessibility object's attribute.

func **AXUIElementCopyAttributeValues**(AXUIElement, CFString, CFIndex, CFIndex, UnsafeMutablePointer<CFArray?>) -> AXError

Returns an array of attribute values for the accessibility object's attribute, starting at the specified index.

func **AXUIElementCopyElementAtPosition**(AXUIElement, Float, Float, Unsafe MutablePointer<AXUIElement?>) -> AXError

Returns the accessibility object at the specified position in top-left relative screen coordinates.

func **AXUIElementCopyMultipleAttributeValues**(AXUIElement, CFArray, AXCopyMultipleAttributeOptions, UnsafeMutablePointer<CFArray?>) -> AXError

Returns the values of multiple attributes in the accessibility object.

```
func AXUIElementCopyParameterizedAttributeNames(AXUIElement, Unsafe
MutablePointer<CFArray?>) -> AXError
```
  Returns a list of all the parameterized attributes supported by the specified accessibility
  object.

```
func AXUIElementCopyParameterizedAttributeValue(AXUIElement, CFString,
CFTypeRef, UnsafeMutablePointer<CFTypeRef?>) -> AXError
```
  Returns the value of an accessibility object's parameterized attribute.

```
func AXUIElementCreateApplication(pid_t) -> AXUIElement
```
  Creates and returns the top-level accessibility object for the application with the specified
  process ID.

```
func AXUIElementCreateSystemWide() -> AXUIElement
```
  Returns an accessibility object that provides access to system attributes.

```
func AXUIElementGetAttributeValueCount(AXUIElement, CFString, Unsafe
MutablePointer<CFIndex>) -> AXError
```
  Returns the count of the array of an accessibility object's attribute value.

```
func AXUIElementGetPid(AXUIElement, UnsafeMutablePointer<pid_t>) ->
AXError
```
  Returns the process ID associated with the specified accessibility object.

```
func AXUIElementGetTypeID() -> CFTypeID
```
  Returns the unique type identifier for the AXUIElementRef type.

```
func AXUIElementIsAttributeSettable(AXUIElement, CFString, Unsafe
MutablePointer<DarwinBoolean>) -> AXError
```
  Returns whether the specified accessibility object's attribute can be modified.

```
func AXUIElementPerformAction(AXUIElement, CFString) -> AXError
```
  Requests that the specified accessibility object perform the specified action.

```
func AXUIElementSetAttributeValue(AXUIElement, CFString, CFTypeRef) ->
AXError
```
  Sets the accessibility object's attribute to the specified value.

```
func AXUIElementSetMessagingTimeout(AXUIElement, Float) -> AXError
```
  Sets the timeout value used in the accessibility API.

Callbacks

See the Overview section above for header-level documentation.

`typealias` `AXObserverCallback`

`typealias` `AXObserverCallbackWithInfo`

Data Types

See the Overview section above for header-level documentation.

`struct` `AXCopyMultipleAttributeOptions`

`class` `AXObserver`

`class` `AXUIElement`

   A structure used to refer to an accessibility object.