
NSArray Class Reference

Data Management: Data Types & Collections



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NSArray Class Reference

Inherits from	NSObject
Conforms to	NSCoding NSCopying NSMutableCopying NSFastEnumeration NSObject (NSObject)
Framework	/System/Library/Frameworks/Foundation.framework
Availability	Available in Mac OS X v10.0 and later.
Declared in	NSArray.h NSKeyValueCoding.h NSKeyValueObserving.h NSPathUtilities.h NSPredicate.h NSSortDescriptor.h
Companion guides	Collections Programming Topics Key-Value Coding Programming Guide Property List Programming Guide Predicate Programming Guide
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Overview

`NSArray` and its subclass `NSMutableArray` manage collections of objects called **arrays**. `NSArray` creates static arrays, and `NSMutableArray` creates dynamic arrays.

The `NSArray` and `NSMutableArray` classes adopt the `NSCopying` and `NSMutableCopying` protocols, making it convenient to convert an array of one type to the other.

`NSArray` and `NSMutableArray` are part of a class cluster, so arrays are not actual instances of the `NSArray` or `NSMutableArray` classes but of one of their private subclasses. Although an array's class is private, its interface is public, as declared by these abstract superclasses, `NSArray` and `NSMutableArray`.

NSArray's two primitive methods—[count](#) (page 23) and [objectAtIndex:](#) (page 44)—provide the basis for all other methods in its interface. The `count` method returns the number of elements in the array; `objectAtIndex:` gives you access to the array elements by index, with index values starting at 0.

The methods [objectEnumerator](#) (page 45) and [reverseObjectEnumerator](#) (page 48) also grant sequential access to the elements of the array, differing only in the direction of travel through the elements. These methods are provided so that arrays can be traversed in a manner similar to that used for objects of other collection classes, such as `NSDictionary`. See the `objectEnumerator` method description for a code excerpt that shows how to use these methods to access the elements of an array. In Mac OS X v10.5 and later, it is more efficient to use the fast enumeration protocol (see `NSFastEnumeration`).

NSArray provides methods for querying the elements of the array. The [indexOfObject:](#) (page 32) method searches the array for the object that matches its argument. To determine whether the search is successful, each element of the array is sent an `isEqual:` message, as declared in the `NSObject` protocol. Another method, [indexOfObjectIdenticalTo:](#) (page 36), is provided for the less common case of determining whether a specific object is present in the array. The `indexOfObjectIdenticalTo:` method tests each element in the array to see whether its `id` matches that of the argument.

NSArray's [filteredArrayUsingPredicate:](#) (page 27) method allows you to create a new array from an existing array filtered using a predicate (see *Predicate Programming Guide*).

NSArray's [makeObjectsPerformSelector:](#) (page 43) and [makeObjectsPerformSelector:withObject:](#) (page 44) methods let you send messages to all objects in the array. To act on the array as a whole, a variety of other methods are defined. You can create a sorted version of the array ([sortedArrayUsingSelector:](#) (page 52) and [sortedArrayUsingFunction:context:](#) (page 50)), extract a subset of the array ([subarrayWithRange:](#) (page 54)), or concatenate the elements of an array of `NSString` objects into a single string ([componentsJoinedByString:](#) (page 21)). In addition, you can compare two arrays using the [isEqualToArray:](#) (page 42) and [firstObjectCommonWithArray:](#) (page 28) methods. Finally, you can create new arrays that contain the objects in an existing array and one or more additional objects with [arrayByAddingObject:](#) (page 20) and [arrayByAddingObjectsFromArray:](#) (page 21).

Arrays maintain strong references to their contents—in a managed memory environment, each object receives a `retain` message before its `id` is added to the array and a `release` message when it is removed from the array or when the array is deallocated. If you want a collection with different object ownership semantics, consider using `CFArrayReference`, `NSMutableArray`, or `NSMutableDictionary` instead.

NSArray is “toll-free bridged” with its Core Foundation counterpart, `CFArrayReference`. What this means is that the Core Foundation type is interchangeable in function or method calls with the bridged Foundation object, providing you cast one type to the other. Therefore, in an API where you see an `NSArray *` parameter, you can pass in a `CFArrayRef`, and in an API where you see a `CFArrayRef` parameter, you can pass in an `NSArray` instance. This arrangement also applies to your concrete subclasses of `NSArray`. See *Carbon-Cocoa Integration Guide* for more information on toll-free bridging.

Subclassing Notes

There is typically little reason to subclass `NSArray`. The class does well what it is designed to do—maintain an ordered collection of objects. But there are situations where a custom `NSArray` object might come in handy. Here are a few possibilities:

- Changing how `NSArray` stores the elements of its collection. You might do this for performance reasons or for better compatibility with legacy code.

- Acquiring more information about what is happening to the collection (for example, statistics gathering).

Methods to Override

Any subclass of `NSArray` *must* override the primitive instance methods `count` (page 23) and `objectAtIndex:` (page 44). These methods must operate on the backing store that you provide for the elements of the collection. For this backing store you can use a static array, a standard `NSArray` object, or some other data type or mechanism. You may also choose to override, partially or fully, any other `NSArray` method for which you want to provide an alternative implementation.

You might want to implement an initializer for your subclass that is suited to the backing store that the subclass is managing. The `NSArray` class does not have a designated initializer, so your initializer need only invoke the `init` method of `super`. The `NSArray` class adopts the `NSCopying`, `NSMutableCopying`, and `NSCoding` protocols; if you want instances of your own custom subclass created from copying or coding, override the methods in these protocols.

Remember that `NSArray` is the public interface for a class cluster and what this entails for your subclass. The primitive methods of `NSArray` do not include any designated initializers. This means that you must provide the storage for your subclass and implement the primitive methods that directly act on that storage.

Special Considerations

In most cases your custom `NSArray` class should conform to Cocoa's object-ownership conventions. Thus you must send `retain` to each object that you add to your collection and `release` to each object that you remove from the collection. Of course, if the reason for subclassing `NSArray` is to implement object-retention behavior different from the norm (for example, a non-retaining array), then you can ignore this requirement.

Alternatives to Subclassing

Before making a custom class of `NSArray`, investigate `NSPointerArray`, `NSHashTable`, and the corresponding Core Foundation type, `CFArrayReference`. Because `NSArray` and `CFArray` are “toll-free bridged,” you can substitute a `CFArray` object for a `NSArray` object in your code (with appropriate casting). Although they are corresponding types, `CFArray` and `NSArray` do not have identical interfaces or implementations, and you can sometimes do things with `CFArray` that you cannot easily do with `NSArray`. For example, `CFArray` provides a set of callbacks, some of which are for implementing custom retain-release behavior. If you specify `NULL` implementations for these callbacks, you can easily get a non-retaining array.

If the behavior you want to add supplements that of the existing class, you could write a category on `NSArray`. Keep in mind, however, that this category will be in effect for all instances of `NSArray` that you use, and this might have unintended consequences.

Adopted Protocols

NSCoding

```
encodeWithCoder:
initWithCoder:
```

NSCopying

`copyWithZone:`

NSMutableCopying

`mutableCopyWithZone:`

Tasks

Creating an Array

- + [array](#) (page 14)
Creates and returns an empty array.
- + [arrayWithArray:](#) (page 15)
Creates and returns an array containing the objects in another given array.
- + [arrayWithContentsOfFile:](#) (page 15)
Creates and returns an array containing the contents of the file specified by a given path.
- + [arrayWithContentsOfURL:](#) (page 16)
Creates and returns an array containing the contents specified by a given URL.
- + [arrayWithObject:](#) (page 17)
Creates and returns an array containing a given object.
- + [arrayWithObjects:](#) (page 17)
Creates and returns an array containing the objects in the argument list.
- + [arrayWithObjects:count:](#) (page 18)
Creates and returns an array that includes a given number of objects from a given C array.

Initializing an Array

- [initWithArray:](#) (page 39)
Initializes a newly allocated array by placing in it the objects contained in a given array.
- [initWithArray:copyItems:](#) (page 39)
Initializes a newly allocated array using *anArray* as the source of data objects for the array.
- [initWithContentsOfFile:](#) (page 40)
Initializes a newly allocated array with the contents of the file specified by a given path.
- [initWithContentsOfURL:](#) (page 40)
Initializes a newly allocated array with the contents of the location specified by a given URL.
- [initWithObjects:](#) (page 41)
Initializes a newly allocated array by placing in it the objects in the argument list.
- [initWithObjects:count:](#) (page 41)
Initializes a newly allocated array to include a given number of objects from a given C array.

Querying an Array

- [containsObject:](#) (page 22)
Returns a Boolean value that indicates whether a given object is present in the receiver.
- [count](#) (page 23)
Returns the number of objects currently in the receiver.
- [getObjects:range:](#) (page 28)
Copies the objects contained in the receiver that fall within the specified range to *aBuffer*.
- [lastObject](#) (page 42)
Returns the object in the array with the highest index value.
- [objectAtIndex:](#) (page 44)
Returns the object located at *index*.
- [objectsAtIndexes:](#) (page 46)
Returns an array containing the objects in the receiver at the indexes specified by a given index set.
- [objectEnumerator](#) (page 45)
Returns an enumerator object that lets you access each object in the receiver.
- [reverseObjectEnumerator](#) (page 48)
Returns an enumerator object that lets you access each object in the receiver, in reverse order.
- [getObjects:](#) (page 59) **Deprecated in Mac OS X v10.6**
Copies all the objects contained in the receiver to *aBuffer*.

Finding Objects in an Array

- [indexOfObject:](#) (page 32)
Returns the lowest index whose corresponding array value is equal to a given object.
- [indexOfObject:inRange:](#) (page 33)
Returns the lowest index within a specified range whose corresponding array value is equal to a given object.
- [indexOfObjectIdenticalTo:](#) (page 36)
Returns the lowest index whose corresponding array value is identical to a given object.
- [indexOfObjectIdenticalTo:inRange:](#) (page 36)
Returns the lowest index within a specified range whose corresponding array value is equal to a given object.
- [indexOfObjectPassingTest:](#) (page 37)
Returns the index of the first object in the receiver that passes a test in a given Block.
- [indexOfObjectWithOptions:passingTest:](#) (page 38)
Returns the index of an object in the receiver that passes a test in a given Block for a given set of enumeration options.
- [indexOfObjectAtIndexes:options:passingTest:](#) (page 35)
Returns the index, from a given set of indexes, of the first object in the receiver that passes a test in a given Block for a given set of enumeration options.
- [indexesOfObjectsPassingTest:](#) (page 30)
Returns the indexes of objects in the receiver that pass a test in a given Block.

- [indexesOfObjectsWithOptions:passingTest:](#) (page 31)
Returns the indexes of objects in the receiver that pass a test in a given Block for a given set of enumeration options.
- [indexesOfObjectsAtIndexes:options:passingTest:](#) (page 29)
Returns the indexes, from a given set of indexes, of objects in the receiver that pass a test in a given Block for a given set of enumeration options.
- [indexOfObject:inSortedRange:options:usingComparator:](#) (page 34)
Returns the index, within a specified range, of an object compared with elements in the receiver using a given `NSComparator` block.

Sending Messages to Elements

- [makeObjectsPerformSelector:](#) (page 43)
Sends to each object in the receiver the message identified by a given selector, starting with the first object and continuing through the array to the last object.
- [makeObjectsPerformSelector:withObject:](#) (page 44)
Sends the *aSelector* message to each object in the array, starting with the first object and continuing through the array to the last object.
- [enumerateObjectsUsingBlock:](#) (page 26)
Executes a given block using each object in the receiver, starting with the first object and continuing through the array to the last object.
- [enumerateObjectsWithOptions:usingBlock:](#) (page 26)
Executes a given block using each object in the receiver.
- [enumerateObjectsAtIndexes:options:usingBlock:](#) (page 25)
Executes a given block using the objects in the receiver at the specified indexes.

Comparing Arrays

- [firstObjectCommonWithArray:](#) (page 28)
Returns the first object contained in the receiver that's equal to an object in another given array.
- [isEqualToArray:](#) (page 42)
Compares the receiving array to another array.

Deriving New Arrays

- [arrayByAddingObject:](#) (page 20)
Returns a new array that is a copy of the receiver with a given object added to the end.
- [arrayByAddingObjectsFromArray:](#) (page 21)
Returns a new array that is a copy of the receiver with the objects contained in another array added to the end.
- [filteredArrayUsingPredicate:](#) (page 27)
Evaluates a given predicate against each object in the receiver and returns a new array containing the objects for which the predicate returns true.

- [subarrayWithRange:](#) (page 54)
Returns a new array containing the receiver's elements that fall within the limits specified by a given range.

Sorting

- [sortedArrayHint](#) (page 49)
Analyzes the receiver and returns a "hint" that speeds the sorting of the array when the hint is supplied to [sortedArrayUsingFunction:context:hint:](#) (page 51).
- [sortedArrayUsingFunction:context:](#) (page 50)
Returns a new array that lists the receiver's elements in ascending order as defined by the comparison function *comparator*.
- [sortedArrayUsingFunction:context:hint:](#) (page 51)
Returns a new array that lists the receiver's elements in ascending order as defined by the comparison function *comparator*.
- [sortedArrayUsingDescriptors:](#) (page 50)
Returns a copy of the receiver sorted as specified by a given array of sort descriptors.
- [sortedArrayUsingSelector:](#) (page 52)
Returns an array that lists the receiver's elements in ascending order, as determined by the comparison method specified by a given selector.
- [sortedArrayUsingComparator:](#) (page 49)
Returns an array that lists the receiver's elements in ascending order, as determined by the comparison method specified by a given `NSComparator` Block.
- [sortedArrayWithOptions:usingComparator:](#) (page 53)
Returns an array that lists the receiver's elements in ascending order, as determined by the comparison method specified by a given `NSComparator` Block.

Working with String Elements

- [componentsJoinedByString:](#) (page 21)
Constructs and returns an `NSString` object that is the result of interposing a given separator between the elements of the receiver's array.

Creating a Description

- [description](#) (page 23)
Returns a string that represents the contents of the receiver, formatted as a property list.
- [descriptionWithLocale:](#) (page 23)
Returns a string that represents the contents of the receiver, formatted as a property list.
- [descriptionWithLocale:indent:](#) (page 24)
Returns a string that represents the contents of the receiver, formatted as a property list.
- [writeToFile:atomically:](#) (page 55)
Writes the contents of the receiver to a file at a given path.

- [writeToURL:atomically:](#) (page 55)
Writes the contents of the receiver to the location specified by a given URL.

Collecting Paths

- [pathsMatchingExtensions:](#) (page 46)
Returns an array containing all the pathname elements in the receiver that have filename extensions from a given array.

Key-Value Observing

- [addObserver:forKeyPath:options:context:](#) (page 19)
Raises an exception.
- [removeObserver:forKeyPath:](#) (page 47)
Raises an exception.
- [addObserver:toObjectsAtIndexes:forKeyPath:options:context:](#) (page 19)
Registers *anObserver* to receive key value observer notifications for the specified *keyPath* relative to the objects at *indexes*.
- [removeObserver:fromObjectsAtIndexes:forKeyPath:](#) (page 47)
Removes *anObserver* from all key value observer notifications associated with the specified *keyPath* relative to the receiver's objects at *indexes*.

Key-Value Coding

- [setValue:forKey:](#) (page 48)
Invokes `setValue:forKey:` on each of the receiver's items using the specified *value* and *key*.
- [valueForKey:](#) (page 54)
Returns an array containing the results of invoking `valueForKey:` using *key* on each of the receiver's objects.

Class Methods

array

Creates and returns an empty array.

```
+ (id)array
```

Return Value

An empty array.

Discussion

This method is used by mutable subclasses of NSArray.

Availability

Available in Mac OS X v10.0 and later.

See Also

+ [arrayWithObject:](#) (page 17)

+ [arrayWithObjects:](#) (page 17)

Related Sample Code

Quartz Composer WWDC 2005 TextEdit

SimpleCalendar

SimpleStickies

Sketch+Accessibility

Sketch-112

Declared In

NSArray.h

arrayWithArray:

Creates and returns an array containing the objects in another given array.

```
+ (id) arrayWithArray:(NSArray *) anArray
```

Parameters

anArray

An array.

Return Value

An array containing the objects in *anArray*.

Availability

Available in Mac OS X v10.0 and later.

See Also

+ [arrayWithObjects:](#) (page 17)

- [initWithObjects:](#) (page 41)

Related Sample Code

CoreRecipes

EnhancedDataBurn

ImageBackground

UIKitMovieShuffler

Reminders

Declared In

NSArray.h

arrayWithContentsOfFile:

Creates and returns an array containing the contents of the file specified by a given path.

```
+ (id) arrayWithContentsOfFile:(NSString *)aPath
```

Parameters

aPath

The path to a file containing a string representation of an array produced by the [writeToFile:atomically:](#) (page 55) method.

Return Value

An array containing the contents of the file specified by *aPath*. Returns *nil* if the file can't be opened or if the contents of the file can't be parsed into an array.

Discussion

The array representation in the file identified by *aPath* must contain only property list objects (*NSString*, *NSData*, *NSArray*, or *NSDictionary* objects).

Availability

Available in Mac OS X v10.0 and later.

See Also

- [writeToFile:atomically:](#) (page 55)

Related Sample Code

DictionaryController

IconCollection

LSMSmartCategorizer

Mountains

URL CacheInfo

Declared In

NSArray.h

arrayWithContentsOfURL:

Creates and returns an array containing the contents specified by a given URL.

```
+ (id) arrayWithContentsOfURL:(NSURL *)aURL
```

Parameters

aURL

The location of a file containing a string representation of an array produced by the [writeToURL:atomically:](#) (page 55) method.

Return Value

An array containing the contents specified by *aURL*. Returns *nil* if the location can't be opened or if the contents of the location can't be parsed into an array.

Discussion

The array representation at the location identified by *aURL* must contain only property list objects (*NSString*, *NSData*, *NSArray*, or *NSDictionary* objects).

Availability

Available in Mac OS X v10.0 and later.

See Also

- [writeToURL:atomically:](#) (page 55)

Declared In

NSArray.h

arrayWithObject:

Creates and returns an array containing a given object.

```
+ (id)arrayWithObject:(id)anObject
```

Parameters

anObject

An object.

Return Value

An array containing the single element *anObject*.

Availability

Available in Mac OS X v10.0 and later.

See Also

+ [array](#) (page 14)

+ [arrayWithObjects:](#) (page 17)

Related Sample Code

CoreRecipes

DemoMonkey

People

Quartz Composer WWDC 2005 TextEdit

Reducer

Declared In

NSArray.h

arrayWithObjects:

Creates and returns an array containing the objects in the argument list.

```
+ (id)arrayWithObjects:(id)firstObj, ...
```

Parameters

firstObj, ...

A comma-separated list of objects ending with `nil`.

Return Value

An array containing the objects in the argument list.

Discussion

This code example creates an array containing three different types of element:

```
NSArray *myArray;
```

```
NSDate *aDate = [NSDate distantFuture];
NSNumber *aValue = [NSNumber numberWithInt:5];
NSString *aString = @"a string";

myArray = [NSArray arrayWithObjects:aDate, aValue, aString, nil];
```

Availability

Available in Mac OS X v10.0 and later.

See Also

+ [array](#) (page 14)

+ [arrayWithObject:](#) (page 17)

Related Sample Code

From A View to A Movie

From A View to A Picture

OpenGL Filter Basics Cocoa

QTCoreVideo301

Sketch-112

Declared In

NSArray.h

arrayWithObjects:count:

Creates and returns an array that includes a given number of objects from a given C array.

```
+ (id)arrayWithObjects:(const id *)objects count:(NSUInteger)count
```

Parameters

objects

A C array of objects.

count

The number of values from the *objects* C array to include in the new array. This number will be the count of the new array—it must not be negative or greater than the number of elements in *objects*.

Return Value

A new array including the first *count* objects from *objects*.

Discussion

Elements are added to the new array in the same order they appear in *objects*, up to but not including index *count*. For example:

```
NSString *strings[3];
strings[0] = @"First";
strings[1] = @"Second";
strings[2] = @"Third";
```

```
NSArray *stringsArray = [NSArray arrayWithObjects:strings count:2];
// strings array contains { @"First", @"Second" }
```

Availability

Available in Mac OS X v10.0 and later.

See Also

- [getObjects:](#) (page 59)
- [getObjects:range:](#) (page 28)

Declared In

NSArray.h

Instance Methods

addObserver:forKeyPath:options:context:

Raises an exception.

```
- (void)addObserver:(NSObject *)observer forKeyPath:(NSString *)keyPath
  options:(NSKeyValueObservingOptions)options context:(void *)context
```

Parameters

observer

The object to register for KVO notifications. The observer must implement the key-value observing method `observeValueForKeyPath:ofObject:change:context:.`

keyPath

The key path, relative to the receiver, of the property to observe. This value must not be `nil`.

options

A combination of `NSKeyValueObservingOptions` values that specifies what is included in observation notifications.

context

Arbitrary data that is passed to *observer* in `observeValueForKeyPath:ofObject:change:context:.`

Special Considerations

NSArray objects are not observable, so this method raises an exception when invoked on an NSArray object. Instead of observing an array, observe the to-many relationship for which the array is the collection of related objects.

Availability

Available in Mac OS X v10.4 and later.

See Also

- [removeObserver:forKeyPath:](#) (page 47)
- [addObserver:toObjectsAtIndexes:forKeyPath:options:context:](#) (page 19)

Declared In

NSKeyValueObserving.h

addObserver:toObjectsAtIndexes:forKeyPath:options:context:

Registers *anObserver* to receive key value observer notifications for the specified *keypath* relative to the objects at *indexes*.

```
- (void)addObserver:(NSObject *)anObserver toObjectsAtIndexes:(NSIndexSet *)indexes
    forKeyPath:(NSString *)keyPath options:(NSKeyValueObservingOptions)options
    context:(void *)context
```

Parameters

anObserver

The observer.

indexes

The index set.

keyPath

The key path, relative to the receiver, to be observed.

options

The options to be included in the notification.

context

The context passed to the notifications.

Discussion

The *options* determine what is included in the notifications, and the *context* is passed in the notifications.

This is not merely a convenience method; invoking this method is potentially much faster than repeatedly invoking `addObserver:forKeyPath:options:context:`.

Availability

Available in Mac OS X v10.3 and later.

See Also

- [removeObserver:fromObjectsAtIndexes:forKeyPath:](#) (page 47)

Related Sample Code

iSpend

Sketch+Accessibility

Declared In

NSKeyValueObserving.h

arrayByAddingObject:

Returns a new array that is a copy of the receiver with a given object added to the end.

```
- (NSArray *)arrayByAddingObject:(id)anObject
```

Parameters

anObject

An object.

Return Value

A new array that is a copy of the receiver with *anObject* added to the end.

Discussion

If *anObject* is `nil`, an `NSInvalidArgumentException` is raised.

Availability

Available in Mac OS X v10.0 and later.

See Also

addObject: (NSMutableArray)

Related Sample Code

UIElementInspector

Declared In

NSArray.h

arrayByAddingObjectsFromArray:

Returns a new array that is a copy of the receiver with the objects contained in another array added to the end.

```
- (NSArray *)arrayByAddingObjectsFromArray:(NSArray *)otherArray
```

Parameters*otherArray*

An array.

Return ValueA new array that is a copy of the receiver with the objects contained in *otherArray* added to the end.**Availability**

Available in Mac OS X v10.0 and later.

See Also

addObjectsFromArray: (NSMutableArray)

Related Sample Code

QTRecorder

Sketch+Accessibility

Declared In

NSArray.h

componentsJoinedByString:

Constructs and returns an NSString object that is the result of interposing a given separator between the elements of the receiver's array.

```
- (NSString *)componentsJoinedByString:(NSString *)separator
```

Parameters*separator*

The string to interpose between the elements of the receiver's array.

Return ValueAn NSString object that is the result of interposing *separator* between the elements of the receiver's array. If the receiver has no elements, returns an NSString object representing an empty string.**Discussion**

For example, this code excerpt writes "here be dragons" to the console:

```
NSArray *pathArray = [NSArray arrayWithObjects:@"here", @"be", @"dragons", nil];
NSLog(@"%@", [pathArray componentsJoinedByString:@" "]);
```

Special Considerations

Each element in the receiver's array must handle description.

Availability

Available in Mac OS X v10.0 and later.

See Also

`componentsSeparatedByString:` (NSString)

Related Sample Code

AttachAScript

NewsReader

QTMetadataEditor

Sproing

TipWrapper

Declared In

NSArray.h

containsObject:

Returns a Boolean value that indicates whether a given object is present in the receiver.

```
- (BOOL)containsObject:(id)anObject
```

Parameters

anObject

An object.

Return Value

YES if *anObject* is present in the receiver, otherwise NO.

Discussion

This method determines whether *anObject* is present in the receiver by sending an `isEqual:` message to each of the receiver's objects (and passing *anObject* as the parameter to each `isEqual:` message).

Availability

Available in Mac OS X v10.0 and later.

See Also

- [indexOfObject:](#) (page 32)

- [indexOfObjectIdenticalTo:](#) (page 36)

Related Sample Code

Quartz Composer WWDC 2005 TextEdit

Sketch+Accessibility

TimelineToTC

Declared In

NSArray.h

count

Returns the number of objects currently in the receiver.

- (NSUInteger)count

Return Value

The number of objects currently in the receiver.

Availability

Available in Mac OS X v10.0 and later.

See Also

- [objectAtIndex:](#) (page 44)

Related Sample Code

CoreRecipes

ImageKitDemo

Quartz Composer WWDC 2005 TextEdit

Sketch+Accessibility

Sketch-112

Declared In

NSArray.h

description

Returns a string that represents the contents of the receiver, formatted as a property list.

- (NSString *)description

Return Value

A string that represents the contents of the receiver, formatted as a property list.

Availability

Available in Mac OS X v10.0 and later.

See Also

- [descriptionWithLocale:](#) (page 23)

- [descriptionWithLocale:indent:](#) (page 24)

Declared In

NSArray.h

descriptionWithLocale:

Returns a string that represents the contents of the receiver, formatted as a property list.

- (NSString *)descriptionWithLocale:(id)locale

Parameters*locale*

An `NSLocale` object or an `NSDictionary` object that specifies options used for formatting each of the receiver's elements (where recognized). Specify `nil` if you don't want the elements formatted.

Return Value

A string that represents the contents of the receiver, formatted as a property list.

Discussion

For a description of how *locale* is applied to each element in the receiving array, see [descriptionWithLocale:indent:](#) (page 24).

Availability

Available in Mac OS X v10.0 and later.

See Also

- [description](#) (page 23)
- [descriptionWithLocale:indent:](#) (page 24)

Declared In

NSArray.h

descriptionWithLocale:indent:

Returns a string that represents the contents of the receiver, formatted as a property list.

```
- (NSString *)descriptionWithLocale:(id)locale indent:(NSUInteger)level
```

Parameters*locale*

An `NSLocale` object or an `NSDictionary` object that specifies options used for formatting each of the receiver's elements (where recognized). Specify `nil` if you don't want the elements formatted.

level

A level of indent, to make the output more readable: set *level* to 0 to use four spaces to indent, or 1 to indent the output with a tab character.

Return Value

A string that represents the contents of the receiver, formatted as a property list.

Discussion

The returned `NSString` object contains the string representations of each of the receiver's elements, in order, from first to last. To obtain the string representation of a given element, [descriptionWithLocale:indent:](#) proceeds as follows:

- If the element is an `NSString` object, it is used as is.
- If the element responds to [descriptionWithLocale:indent:](#), that method is invoked to obtain the element's string representation.
- If the element responds to [descriptionWithLocale:](#) (page 23), that method is invoked to obtain the element's string representation.
- If none of the above conditions is met, the element's string representation is obtained by invoking its [description](#) (page 23) method.

Availability

Available in Mac OS X v10.0 and later.

See Also

- [description](#) (page 23)
- [descriptionWithLocale:](#) (page 23)

Declared In

NSArray.h

enumerateObjectsAtIndexes:options:usingBlock:

Executes a given block using the objects in the receiver at the specified indexes.

```
- (void)enumerateObjectsAtIndexes:(NSIndexSet *)indexSet
    options:(NSEnumerationOptions)opts
    usingBlock:(void (^)(id obj, NSUInteger idx, BOOL *stop))block
```

Parameters

indexSet

The indexes of the objects over which to enumerate.

opts

A bitmask that specifies the options for the enumeration (whether it should be performed concurrently and whether it should be performed in reverse order).

block

The block to apply to elements in the array.

The block takes three arguments:

obj

The element in the array.

idx

The index of the element in the array.

stop

A reference to a Boolean value. The block can set the value to YES to stop further processing of the array. The stop argument is an out-only argument. You should only ever set this Boolean to YES within the Block.

Discussion

By default, the enumeration starts with the first object and continues serially through the array to the last element specified by *indexSet*. You can specify `NSEnumerationConcurrent` and/or `NSEnumerationReverse` as enumeration options to modify this behavior.

Important: If the Block parameter or the *indexSet* is nil this method will raise an exception.

Availability

Available in Mac OS X v10.6 and later.

See Also

- [enumerateObjectsUsingBlock:](#) (page 26)

- [makeObjectsPerformSelector:](#) (page 43)
- [makeObjectsPerformSelector:withObject:](#) (page 44)

Declared In

NSArray.h

enumerateObjectsUsingBlock:

Executes a given block using each object in the receiver, starting with the first object and continuing through the array to the last object.

```
- (void)enumerateObjectsUsingBlock:(void (^)(id obj, NSUInteger idx, BOOL *stop))block
```

Parameters*block*

The block to apply to elements in the array.

The block takes three arguments:

obj

The element in the array.

idx

The index of the element in the array.

stop

A reference to a Boolean value. The block can set the value to YES to stop further processing of the array. The stop argument is an out-only argument. You should only ever set this Boolean to YES within the Block.

Discussion

If the Block parameter is nil this method will raise an exception.

Availability

Available in Mac OS X v10.6 and later.

See Also

- [enumerateObjectsWithOptions:usingBlock:](#) (page 26)
- [makeObjectsPerformSelector:](#) (page 43)
- [makeObjectsPerformSelector:withObject:](#) (page 44)

Declared In

NSArray.h

enumerateObjectsWithOptions:usingBlock:

Executes a given block using each object in the receiver.

```
- (void)enumerateObjectsWithOptions:(NSEnumerationOptions)opts
    usingBlock:(void (^)(id obj, NSUInteger idx, BOOL *stop))block
```

Parameters*opts*

A bitmask that specifies the options for the enumeration (whether it should be performed concurrently and whether it should be performed in reverse order).

block

The block to apply to elements in the array.

The block takes three arguments:

obj

The element in the array.

idx

The index of the element in the array.

stop

A reference to a Boolean value. The block can set the value to YES to stop further processing of the array. The stop argument is an out-only argument. You should only ever set this Boolean to YES within the Block.

Discussion

By default, the enumeration starts with the first object and continues serially through the array to the last object. You can specify `NSEnumerationConcurrent` and/or `NSEnumerationReverse` as enumeration options to modify this behavior.

Important: If the Block parameter is `nil` this method will raise an exception.

Availability

Available in Mac OS X v10.6 and later.

See Also

- [enumerateObjectsUsingBlock:](#) (page 26)
- [makeObjectsPerformSelector:](#) (page 43)
- [makeObjectsPerformSelector:withObject:](#) (page 44)

Declared In

NSArray.h

filteredArrayUsingPredicate:

Evaluates a given predicate against each object in the receiver and returns a new array containing the objects for which the predicate returns true.

```
- (NSArray *)filteredArrayUsingPredicate:(NSPredicate *)predicate
```

Parameters*predicate*

The predicate against which to evaluate the receiver's elements.

Return Value

A new array containing the objects in the receiver for which *predicate* returns true.

Discussion

For more details, see *Predicate Programming Guide*.

Availability

Available in Mac OS X v10.4 and later.

Related Sample Code

ScriptingBridgeCal

SimpleCalendar

Declared In

NSPredicate.h

firstObjectCommonWithArray:

Returns the first object contained in the receiver that's equal to an object in another given array.

```
- (id)firstObjectCommonWithArray:(NSArray *)otherArray
```

Parameters

otherArray

An array.

Return Value

Returns the first object contained in the receiver that's equal to an object in *otherArray*. If no such object is found, returns `nil`.

Discussion

This method uses `isEqual:` to check for object equality.

Availability

Available in Mac OS X v10.0 and later.

See Also

- [containsObject:](#) (page 22)

Declared In

NSArray.h

getObjects:range:

Copies the objects contained in the receiver that fall within the specified range to *aBuffer*.

```
- (void)getObjects:(id *)aBuffer range:(NSRange)aRange
```

Parameters

aBuffer

A C array of objects of size at least the length of the range specified by *aRange*.

aRange

A range within the bounds of the receiver.

If the location plus the length of the range is greater than the count of the receiver, this method raises an `NSRangeException`.

Discussion

The method copies into *aBuffer* the objects in the receiver in the range specified by *aRange*; the size of the buffer must therefore be at least the length of the range multiplied by the size of an object reference, as shown in the following example (this is solely for illustration—you should typically not create a buffer simply to iterate over the contents of an array):

```
NSArray *mArray = // an array with at least six elements...;
id *objects;

NSRange range = NSMakeRange(2, 4);
objects = malloc(sizeof(id) * range.length);

[mArray getObjects:objects range:range];

for (i = 0; i < range.length; i++) {
    NSLog(@"objects: %@", objects[i]);
}
free(objects);
```

Availability

Available in Mac OS X v10.0 and later.

See Also

+ [arrayWithObjects:count:](#) (page 18)

Declared In

NSArray.h

indexesOfObjectsAtIndexes:options:passingTest:

Returns the indexes, from a given set of indexes, of objects in the receiver that pass a test in a given Block for a given set of enumeration options.

```
- (NSIndexSet *)indexesOfObjectsAtIndexes:(NSIndexSet *)indexSet
    options:(NSEnumerationOptions)opts passingTest:(BOOL (^)(id obj, NSUInteger
    idx, BOOL *stop))predicate
```

Parameters

indexSet

The indexes of the objects over which to enumerate.

opts

A bitmask that specifies the options for the enumeration (whether it should be performed concurrently and whether it should be performed in reverse order).

predicate

The block to apply to elements in the array.

The block takes three arguments:

obj

The element in the array.

idx

The index of the element in the array.

stop

A reference to a Boolean value. The block can set the value to YES to stop further processing of the array. The stop argument is an out-only argument. You should only ever set this Boolean to YES within the Block.

The Block returns a Boolean value that indicates whether *obj* passed the test.

Return Value

The indexes from *indexSet* whose corresponding values in the receiver pass the test specified by *predicate*.

Discussion

By default, the enumeration starts with the first object and continues serially through the array to the last element specified by *indexSet*. You can specify `NSEnumerationConcurrent` and/or `NSEnumerationReverse` as enumeration options to modify this behavior.

Important: If the Block parameter or the *indexSet* is `nil` this method will raise an exception.

Availability

Available in Mac OS X v10.6 and later.

Declared In

`NSArray.h`

indexesOfObjectsPassingTest:

Returns the indexes of objects in the receiver that pass a test in a given Block.

```
- (NSIndexSet *)indexesOfObjectsPassingTest:(BOOL (^)(id obj, NSUInteger idx, BOOL *stop))predicate
```

Parameters*predicate*

The block to apply to elements in the array.

The block takes three arguments:

obj

The element in the array.

idx

The index of the element in the array.

stop

A reference to a Boolean value. The block can set the value to `YES` to stop further processing of the array. The `stop` argument is an out-only argument. You should only ever set this Boolean to `YES` within the Block.

The Block returns a Boolean value that indicates whether *obj* passed the test.

Return Value

The indexes whose corresponding values in the receiver pass the test specified by *predicate*.

Availability

Available in Mac OS X v10.6 and later.

Declared In

NSArray.h

indexesOfObjectsWithOptions:passingTest:

Returns the indexes of objects in the receiver that pass a test in a given Block for a given set of enumeration options.

```
- (NSIndexSet *)indexesOfObjectsWithOptions:(NSEnumerationOptions)opts
    passingTest:(BOOL (^)(id obj, NSUInteger idx, BOOL *stop))predicate
```

Parameters*opts*

A bitmask that specifies the options for the enumeration (whether it should be performed concurrently and whether it should be performed in reverse order).

predicate

The block to apply to elements in the array.

The block takes three arguments:

obj

The element in the array.

idx

The index of the element in the array.

stop

A reference to a Boolean value. The block can set the value to YES to stop further processing of the array. The stop argument is an out-only argument. You should only ever set this Boolean to YES within the Block.

The Block returns a Boolean value that indicates whether *obj* passed the test.

Return Value

The indexes whose corresponding values in the receiver pass the test specified by *predicate*.

Discussion

By default, the enumeration starts with the first object and continues serially through the array to the last object. You can specify `NSEnumerationConcurrent` and/or `NSEnumerationReverse` as enumeration options to modify this behavior.

Important: If the Block parameter is `nil` this method will raise an exception.

Availability

Available in Mac OS X v10.6 and later.

Declared In

`NSArray.h`

indexOfObject:

Returns the lowest index whose corresponding array value is equal to a given object.

```
- (NSUInteger)indexOfObject:(id)anObject
```

Parameters

anObject

An object.

Return Value

The lowest index whose corresponding array value is equal to *anObject*. If none of the objects in the receiver is equal to *anObject*, returns `NSNotFound`.

Discussion

Objects are considered equal if `isEqual:` returns YES.

Important: If *anObject* is `nil` an exception is raised.

Availability

Available in Mac OS X v10.0 and later.

See Also

- [containsObject:](#) (page 22)
- [indexOfObjectIdenticalTo:](#) (page 36)

Related Sample Code

CocoaSlides

DemoAssistant

DragNDropOutlineView

NewsReader

WhackedTV

Declared In

NSArray.h

indexOfObjectInRange:

Returns the lowest index within a specified range whose corresponding array value is equal to a given object

.

```
- (NSUInteger)indexOfObject:(id)anObject inRange:(NSRange)range
```

Parameters

anObject

An object.

range

The range of indexes in the receiver within which to search for *anObject*.

Return Value

The lowest index within *range* whose corresponding array value is equal to *anObject*. If none of the objects within *range* is equal to *anObject*, returns `NSNotFound`.

Discussion

Objects are considered equal if `isEqual:` returns YES.

Availability

Available in Mac OS X v10.0 and later.

See Also

- [containsObject:](#) (page 22)
- [indexOfObjectIdenticalTo:inRange:](#) (page 36)

Declared In

NSArray.h

indexOfObject:inSortedRange:options:usingComparator:

Returns the index, within a specified range, of an object compared with elements in the receiver using a given `NSComparator` block.

```
- (NSUInteger)indexOfObject:(id)obj
    inSortedRange:(NSRange)r
    options:(NSBinarySearchingOptions)opts
    usingComparator:(NSComparator)cmp
```

Parameters

obj

An object for which to search in the receiver.

If this value is `nil`, throws an `NSInvalidArgumentException`.

r

The range within the receiver to search for *obj*.

If *r* exceeds the bounds of the receiver (if the location plus length of the range is greater than the count of the receiver), throws an `NSRangeException`.

opts

Options for the search. For possible values, see “[NSBinarySearchingOptions](#)” (page 56).

If you specify both [NSBinarySearchingFirstEqual](#) (page 56) and [NSBinarySearchingLastEqual](#) (page 56), throws an `NSInvalidArgumentException`.

cmp

A comparator block used to compare the object *obj* with elements in the receiver.

If this value is `NULL`, throws an `NSInvalidArgumentException`.

Return Value

If the [NSBinarySearchingInsertionIndex](#) (page 57) option is not specified:

- If the *obj* is found and neither [NSBinarySearchingFirstEqual](#) (page 56) nor [NSBinarySearchingLastEqual](#) (page 56) is specified, returns an arbitrary matching object's index.
- If the [NSBinarySearchingFirstEqual](#) (page 56) option is also specified, returns the lowest index of equal objects.
- If the [NSBinarySearchingLastEqual](#) (page 56) option is also specified, returns the highest index of equal objects.
- If the object is not found, returns `NSNotFound`.

If the [NSBinarySearchingInsertionIndex](#) (page 57) option is specified, returns the index at which you should insert *obj* in order to maintain a sorted array:

- If the *obj* is found and neither [NSBinarySearchingFirstEqual](#) (page 56) nor [NSBinarySearchingLastEqual](#) (page 56) is specified, returns any equal or one larger index than any matching object's index.
- If the [NSBinarySearchingFirstEqual](#) (page 56) option is also specified, returns the lowest index of equal objects.
- If the [NSBinarySearchingLastEqual](#) (page 56) option is also specified, returns the highest index of equal objects.
- If the object is not found, returns the index of the least greater object, or the index at the end of the array if the object is larger than all other elements.

Special Considerations

The elements in the receiver must have already been sorted using the comparator *cmp*. If the array is not sorted, the result is undefined.

Availability

Available in Mac OS X v10.6 and later.

Declared In

NSArray.h

indexOfObjectAtIndexes:options:passingTest:

Returns the index, from a given set of indexes, of the first object in the receiver that passes a test in a given Block for a given set of enumeration options.

```
- (NSUInteger)indexOfObjectAtIndexes:(NSIndexSet *)indexSet
  options:(NSEnumerationOptions)opts passingTest:(BOOL (^)(id obj, NSUInteger
  idx, BOOL *stop))predicate
```

Parameters

indexSet

The indexes of the objects over which to enumerate.

opts

A bitmask that specifies the options for the enumeration (whether it should be performed concurrently and whether it should be performed in reverse order).

predicate

The block to apply to elements in the array.

The block takes three arguments:

obj

The element in the array.

idx

The index of the element in the array.

stop

A reference to a Boolean value. The block can set the value to YES to stop further processing of the array. The stop argument is an out-only argument. You should only ever set this Boolean to YES within the Block.

The Block returns a Boolean value that indicates whether *obj* passed the test.

Return Value

The lowest index whose corresponding value in the receiver passes the test specified by *predicate*. If no objects in the receiver pass the test, returns `NSNotFound`.

Discussion

By default, the enumeration starts with the first object and continues serially through the array to the last element specified by *indexSet*. You can specify `NSEnumerationConcurrent` and/or `NSEnumerationReverse` as enumeration options to modify this behavior.

Important: If the Block parameter or *indexSet* is nil this method will raise an exception.

Availability

Available in Mac OS X v10.6 and later.

Declared In

NSArray.h

indexOfObjectIdenticalTo:

Returns the lowest index whose corresponding array value is identical to a given object.

```
- (NSInteger)indexOfObjectIdenticalTo:(id)anObject
```

Parameters

anObject

An object.

Return Value

The lowest index whose corresponding array value is identical to *anObject*. If none of the objects in the receiver is identical to *anObject*, returns `NSNotFound`.

Discussion

Objects are considered identical if their object addresses are the same.

Availability

Available in Mac OS X v10.0 and later.

See Also

- [containsObject:](#) (page 22)
- [indexOfObject:](#) (page 32)

Related Sample Code

Quartz Composer WWDC 2005 TextEdit

QuickLookSketch

Sketch+Accessibility

Sketch-112

SourceView

Declared In

NSArray.h

indexOfObjectIdenticalTo:inRange:

Returns the lowest index within a specified range whose corresponding array value is equal to a given object

.

```
- (NSInteger)indexOfObjectIdenticalTo:(id)anObject inRange:(NSRange)range
```

Parameters*anObject*

An object.

*range*The range of indexes in the receiver within which to search for *anObject*.**Return Value**The lowest index within *range* whose corresponding array value is identical to *anObject*. If none of the objects within *range* is identical to *anObject*, returns `NSNotFound`.**Discussion**

Objects are considered identical if their object addresses are the same.

Availability

Available in Mac OS X v10.0 and later.

See Also

- [containsObject:](#) (page 22)
- [indexOfObject:inRange:](#) (page 33)

Declared In

NSArray.h

indexOfObjectPassingTest:

Returns the index of the first object in the receiver that passes a test in a given Block.

```
- (NSUInteger)indexOfObjectPassingTest:(BOOL (^)(id obj, NSUInteger idx, BOOL *stop))predicate
```

Parameters*predicate*

The block to apply to elements in the array.

The block takes three arguments:

obj

The element in the array.

idx

The index of the element in the array.

*stop*A reference to a Boolean value. The block can set the value to `YES` to stop further processing of the array. The *stop* argument is an out-only argument. You should only ever set this Boolean to `YES` within the Block.The Block returns a Boolean value that indicates whether *obj* passed the test.**Return Value**The lowest index whose corresponding value in the receiver passes the test specified by *predicate*. If no objects in the receiver pass the test, returns `NSNotFound`.**Discussion**If the Block parameter is `nil` this method will raise an exception.

Availability

Available in Mac OS X v10.6 and later.

Declared In

NSArray.h

indexOfObjectWithOptions:passingTest:

Returns the index of an object in the receiver that passes a test in a given Block for a given set of enumeration options.

```
- (NSUInteger)indexOfObjectWithOptions:(NSEnumerationOptions)opts passingTest:(BOOL (^)(id obj, NSUInteger idx, BOOL *stop))predicate
```

Parameters

opts

A bitmask that specifies the options for the enumeration (whether it should be performed concurrently and whether it should be performed in reverse order).

predicate

The block to apply to elements in the array.

The block takes three arguments:

obj

The element in the array.

idx

The index of the element in the array.

stop

A reference to a Boolean value. The block can set the value to YES to stop further processing of the array. The stop argument is an out-only argument. You should only ever set this Boolean to YES within the Block.

The Block returns a Boolean value that indicates whether *obj* passed the test.

Return Value

The index whose corresponding value in the receiver passes the test specified by *predicate* and *opts*. If the *opts* bitmask specifies reverse order, then the last item that matches is returned. Otherwise, the index of the first matching object is returned. If no objects in the receiver pass the test, returns `NSNotFound`.

Discussion

By default, the enumeration starts with the first object and continues serially through the array to the last object. You can specify `NSEnumerationConcurrent` and/or `NSEnumerationReverse` as enumeration options to modify this behavior.

Important: If the Block parameter is `nil` this method will raise an exception.

Availability

Available in Mac OS X v10.6 and later.

Declared In

NSArray.h

initWithArray:

Initializes a newly allocated array by placing in it the objects contained in a given array.

```
- (id)initWithArray:(NSArray *)anArray
```

Parameters

anArray

An array.

Return Value

An array initialized to contain the objects in *anArray*. The returned object might be different than the original receiver.

Discussion

After an immutable array has been initialized in this way, it cannot be modified.

Availability

Available in Mac OS X v10.0 and later.

See Also

+ [arrayWithObject:](#) (page 17)

- [initWithObjects:](#) (page 41)

Declared In

NSArray.h

initWithArray:copyItems:

Initializes a newly allocated array using *anArray* as the source of data objects for the array.

```
- (id)initWithArray:(NSArray *)array copyItems:(BOOL)flag
```

Parameters

array

An array.

flag

If YES, each object in *array* receives a `copyWithZone:` message to create a copy of the object. In a managed memory environment, this is instead of the `retain` message the object would otherwise receive. The object copy is then added to the returned array.

If NO, then in a managed memory environment each object in *array* simply receives a `retain` message as it's added to the returned array.

Return Value

An array initialized to contain the objects—or if *flag* is YES, copies of the objects—in *array*. The returned object might be different than the original receiver.

Discussion

After an immutable array has been initialized in this way, it cannot be modified.

Availability

Available in Mac OS X v10.2 and later.

See Also

- [initWithArray:](#) (page 39)
- + [arrayWithObject:](#) (page 17)
- [initWithObjects:](#) (page 41)

Declared In

NSArray.h

initWithContentsOfFile:

Initializes a newly allocated array with the contents of the file specified by a given path.

```
- (id)initWithContentsOfFile:(NSString *)aPath
```

Parameters*aPath*

The path to a file containing a string representation of an array produced by the [writeToFile:atomically:](#) (page 55) method.

Return Value

An array initialized to contain the contents of the file specified by *aPath* or *nil* if the file can't be opened or the contents of the file can't be parsed into an array. The returned object might be different than the original receiver.

Discussion

The array representation in the file identified by *aPath* must contain only property list objects (*NSString*, *NSData*, *NSArray*, or *NSDictionary* objects).

Availability

Available in Mac OS X v10.0 and later.

See Also

- + [arrayWithContentsOfFile:](#) (page 15)
- [writeToFile:atomically:](#) (page 55)

Declared In

NSArray.h

initWithContentsOfURL:

Initializes a newly allocated array with the contents of the location specified by a given URL.

```
- (id)initWithContentsOfURL:(NSURL *)aURL
```

Parameters*aURL*

The location of a file containing a string representation of an array produced by the [writeToURL:atomically:](#) (page 55) method.

Return Value

An array initialized to contain the contents specified by *aURL*. Returns *nil* if the location can't be opened or if the contents of the location can't be parsed into an array. The returned object might be different than the original receiver.

Discussion

The array representation at the location identified by *aURL* must contain only property list objects (`NSString`, `NSData`, `NSArray`, or `NSDictionary` objects).

Availability

Available in Mac OS X v10.0 and later.

See Also

+ [arrayWithContentsOfURL:](#) (page 16)

- [writeToURL:atomically:](#) (page 55)

Declared In

`NSArray.h`

initWithObjects:

Initializes a newly allocated array by placing in it the objects in the argument list.

```
- (id)initWithObjects:(id)firstObj, ...
```

Parameters

firstObj, ...

A comma-separated list of objects ending with `nil`.

Return Value

An array initialized to include the objects in the argument list. The returned object might be different than the original receiver.

Discussion

After an immutable array has been initialized in this way, it can't be modified.

Availability

Available in Mac OS X v10.0 and later.

See Also

- [initWithObjects:count:](#) (page 41)

+ [arrayWithObjects:](#) (page 17)

- [initWithArray:](#) (page 39)

Declared In

`NSArray.h`

initWithObjects:count:

Initializes a newly allocated array to include a given number of objects from a given C array.

```
- (id)initWithObjects:(const id *)objects
    count:(NSUInteger)count
```

Parameters

objects

A C array of objects.

count

The number of values from the *objects* C array to include in the new array. This number will be the count of the new array—it must not be negative or greater than the number of elements in *objects*.

Return Value

A newly allocated array including the first *count* objects from *objects*. The returned object might be different than the original receiver.

Discussion

Elements are added to the new array in the same order they appear in *objects*, up to but not including index *count*.

After an immutable array has been initialized in this way, it can't be modified.

Availability

Available in Mac OS X v10.0 and later.

See Also

- [initWithObjects:](#) (page 41)
- + [arrayWithObjects:](#) (page 17)
- [initWithArray:](#) (page 39)

Declared In

NSArray.h

isEqualToArray:

Compares the receiving array to another array.

```
- (BOOL)isEqualToArray:(NSArray *)otherArray
```

Parameters

otherArray

An array.

Return Value

YES if the contents of *otherArray* are equal to the contents of the receiver, otherwise NO.

Discussion

Two arrays have equal contents if they each hold the same number of objects and objects at a given index in each array satisfy the `isEqual:` test.

Availability

Available in Mac OS X v10.0 and later.

Declared In

NSArray.h

lastObject

Returns the object in the array with the highest index value.

```
- (id)lastObject
```

Return Value

The object in the array with the highest index value. If the array is empty, returns `nil`.

Availability

Available in Mac OS X v10.0 and later.

See Also

`removeLastObject` (NSMutableArray)

Related Sample Code

Core Data HTML Store

CoreRecipes

iChatTheater

QTMetadataEditor

Quartz Composer WWDC 2005 TextEdit

Declared In

NSArray.h

makeObjectsPerformSelector:

Sends to each object in the receiver the message identified by a given selector, starting with the first object and continuing through the array to the last object.

- (void)makeObjectsPerformSelector:(SEL)aSelector

Parameters

aSelector

A selector that identifies the message to send to the objects in the receiver. The method must not take any arguments, and must not have the side effect of modifying the receiving array.

Discussion

This method raises an `NSInvalidArgumentException` if *aSelector* is `NULL`.

Availability

Available in Mac OS X v10.0 and later.

See Also

- [makeObjectsPerformSelector:withObject:](#) (page 44)

Related Sample Code

Dicey

EnhancedDataBurn

QTKitMovieShuffler

Sketch-112

WhackedTV

Declared In

NSArray.h

makeObjectsPerformSelector:withObject:

Sends the *aSelector* message to each object in the array, starting with the first object and continuing through the array to the last object.

```
- (void)makeObjectsPerformSelector:(SEL)aSelector withObject:(id)anObject
```

Parameters

aSelector

A selector that identifies the message to send to the objects in the receiver. The method must take a single argument of type *id*, and must not have the side effect of modifying the receiving array.

anObject

The object to send as the argument to each invocation of the *aSelector* method.

Discussion

This method raises an `NSInvalidArgumentException` if *aSelector* is `NULL`.

Availability

Available in Mac OS X v10.0 and later.

See Also

- [makeObjectsPerformSelector:](#) (page 43)

Related Sample Code

iSpend

QTKitMovieShuffler

QuickLookSketch

Sketch+Accessibility

Sketch-112

Declared In

NSArray.h

objectAtIndex:

Returns the object located at *index*.

```
- (id)objectAtIndex:(NSUInteger)index
```

Parameters

index

An index within the bounds of the receiver.

Return Value

The object located at *index*.

Discussion

If *index* is beyond the end of the array (that is, if *index* is greater than or equal to the value returned by `count`), an `NSRangeException` is raised.

Availability

Available in Mac OS X v10.0 and later.

See Also

- [count](#) (page 23)
- [objectsAtIndexes:](#) (page 46)

Related Sample Code

CoreRecipes
 FunHouse
 Quartz Composer WWDC 2005 TextEdit
 Sketch+Accessibility
 Sketch-112

Declared In

NSArray.h

objectEnumerator

Returns an enumerator object that lets you access each object in the receiver.

```
- (NSEnumerator *)objectEnumerator
```

Return Value

An enumerator object that lets you access each object in the receiver, in order, from the element at the lowest index upwards.

Discussion

Returns an enumerator object that lets you access each object in the receiver, in order, starting with the element at index 0, as in:

```
NSEnumerator *enumerator = [myArray objectEnumerator];
id anObject;

while (anObject = [enumerator nextObject]) {
    /* code to act on each element as it is returned */
}
```

Special Considerations

When you use this method with mutable subclasses of NSArray, you must not modify the array during enumeration.

On Mac OS X v10.5 and later, it is more efficient to use the fast enumeration protocol (see NSFastEnumeration).

Availability

Available in Mac OS X v10.0 and later.

See Also

- [reverseObjectEnumerator](#) (page 48)
- [nextObject](#) (NSEnumerator)

Related Sample Code

EnhancedDataBurn
 FunHouse
 SimpleCalendar

SimpleScriptingPlugin
SourceView

Declared In
NSArray.h

objectsAtIndexes:

Returns an array containing the objects in the receiver at the indexes specified by a given index set.

```
- (NSArray *)objectsAtIndexes:(NSIndexSet *)indexes
```

Return Value

An array containing the objects in the receiver at the indexes specified by *indexes*.

Discussion

The returned objects are in the ascending order of their indexes in *indexes*, so that object in returned array with higher index in *indexes* will follow the object with smaller index in *indexes*.

Raises an `NSRangeException` exception if any location in *indexes* exceeds the bounds of the receiver.

Availability

Available in Mac OS X v10.4 and later.

See Also

- [count](#) (page 23)
- [objectAtIndex:](#) (page 44)

Related Sample Code

DemoMonkey
Sketch+Accessibility

Declared In
NSArray.h

pathsMatchingExtensions:

Returns an array containing all the pathname elements in the receiver that have filename extensions from a given array.

```
- (NSArray *)pathsMatchingExtensions:(NSArray *)filterTypes
```

Parameters

filterTypes

An array of `NSString` objects containing filename extensions. The extensions should not include the dot (".") character.

Return Value

An array containing all the pathname elements in the receiver that have filename extensions from the *filterTypes* array.

Availability

Available in Mac OS X v10.0 and later.

Declared In

NSPathUtilities.h

removeObserver:forKeyPath:

Raises an exception.

```
- (void)removeObserver:(NSObject *)observer forKeyPath:(NSString *)keyPath
```

Parameters*observer*

The object to remove as an observer.

*keyPath*A key-path, relative to the receiver, for which *observer* is registered to receive KVO change notifications. This value must not be `nil`.**Special Considerations**

NSArray objects are not observable, so this method raises an exception when invoked on an NSArray object. Instead of observing an array, observe the to-many relationship for which the array is the collection of related objects.

Availability

Available in Mac OS X v10.4 and later.

See Also

- [addObserver:forKeyPath:options:context:](#) (page 19)
- [removeObserver:fromObjectsAtIndexes:forKeyPath:](#) (page 47)

Declared In

NSKeyValueObserving.h

removeObserver:fromObjectsAtIndexes:forKeyPath:

Removes *anObserver* from all key value observer notifications associated with the specified *keyPath* relative to the receiver's objects at *indexes*.

```
- (void)removeObserver:(NSObject *)anObserver fromObjectsAtIndexes:(NSIndexSet *)indexes forKeyPath:(NSString *)keyPath
```

Parameters*anObserver*

The observer.

indexes

The index set.

keyPath

The key path, relative to the receiver, to be observed.

Discussion

This is not merely a convenience method; invoking this method is potentially much faster than repeatedly invoking `removeObserver:forKeyPath:`.

Availability

Available in Mac OS X v10.3 and later.

See Also

- [addObserver:toObjectsAtIndexes:forKeyPath:options:context:](#) (page 19)

Related Sample Code

iSpend

Sketch+Accessibility

Declared In

NSKeyValueObserving.h

reverseObjectEnumerator

Returns an enumerator object that lets you access each object in the receiver, in reverse order.

- (NSEnumerator *)reverseObjectEnumerator

Return Value

An enumerator object that lets you access each object in the receiver, in order, from the element at the highest index down to the element at index 0.

Special Considerations

When you use this method with mutable subclasses of `NSArray`, you must not modify the array during enumeration.

On Mac OS X v10.5 and later, it is more efficient to use the fast enumeration protocol (see `NSFastEnumeration`).

Availability

Available in Mac OS X v10.0 and later.

See Also

- [objectEnumerator](#) (page 45)

`nextObject` (NSEnumerator)

Related Sample Code

EnhancedAudioBurn

GLUT

Rulers

Sketch+Accessibility

SourceView

Declared In

NSArray.h

setValueForKey:

Invokes `setValueForKey:` on each of the receiver's items using the specified *value* and *key*.

- (void)setValue:(id) *value* forKey:(NSString *) *key*

Parameters

value

The object value.

key

The key to store the value.

Availability

Available in Mac OS X v10.3 and later.

See Also

- [valueForKey:](#) (page 54)

Related Sample Code

CoreRecipes

Declared In

NSKeyValueCoding.h

sortedArrayHint

Analyzes the receiver and returns a “hint” that speeds the sorting of the array when the hint is supplied to [sortedArrayUsingFunction:context:hint:](#) (page 51).

- (NSData *)sortedArrayHint

Availability

Available in Mac OS X v10.0 and later.

See Also

- [sortedArrayUsingFunction:context:hint:](#) (page 51)

Declared In

NSArray.h

sortedArrayUsingComparator:

Returns an array that lists the receiver’s elements in ascending order, as determined by the comparison method specified by a given `NSComparator` Block.

- (NSArray *)sortedArrayUsingComparator:(NSComparator) *cmptr*

Parameters

cmptr

A comparator block.

Return Value

An array that lists the receiver’s elements in ascending order, as determined by the comparison method specified *cmptr*.

Availability

Available in Mac OS X v10.6 and later.

Related Sample Code

ComplexBrowser

SimpleCocoaBrowser

Declared In

NSArray.h

sortedArrayUsingDescriptors:

Returns a copy of the receiver sorted as specified by a given array of sort descriptors.

- (NSArray *)sortedArrayUsingDescriptors:(NSArray *)*sortDescriptors***Parameters***sortDescriptors*

An array of NSSortDescriptor objects.

Return ValueA copy of the receiver sorted as specified by *sortDescriptors*.**Discussion**

The first descriptor specifies the primary key path to be used in sorting the receiver's contents. Any subsequent descriptors are used to further refine sorting of objects with duplicate values. See NSSortDescriptor for additional information.

Availability

Available in Mac OS X v10.3 and later.

See Also

- [sortedArrayUsingSelector:](#) (page 52)
- [sortedArrayUsingFunction:context:](#) (page 50)
- [sortedArrayUsingFunction:context:hint:](#) (page 51)

Related Sample Code

CoreRecipes

Son of Grab

Declared In

NSSortDescriptor.h

sortedArrayUsingFunction:context:Returns a new array that lists the receiver's elements in ascending order as defined by the comparison function *comparator*.- (NSArray *)sortedArrayUsingFunction:(NSInteger (*)(id, id, void *))*comparator*
context:(void *)*context***Discussion**

The new array contains references to the receiver's elements, not copies of them.

The comparison function is used to compare two elements at a time and should return `NSOrderedAscending` if the first element is smaller than the second, `NSOrderedDescending` if the first element is larger than the second, and `NSOrderedSame` if the elements are equal. Each time the comparison function is called, it's passed *context* as its third argument. This allows the comparison to be based on some outside parameter, such as whether character sorting is case-sensitive or case-insensitive.

Given *anArray* (an array of `NSNumber` objects) and a comparison function of this type:

```
NSInteger intSort(id num1, id num2, void *context)
{
    int v1 = [num1 intValue];
    int v2 = [num2 intValue];
    if (v1 < v2)
        return NSOrderedAscending;
    else if (v1 > v2)
        return NSOrderedDescending;
    else
        return NSOrderedSame;
}
```

A sorted version of *anArray* is created in this way:

```
NSArray *sortedArray; sortedArray = [anArray sortedArrayUsingFunction:intSort
context:NULL];
```

Availability

Available in Mac OS X v10.0 and later.

See Also

- [sortedArrayUsingDescriptors:](#) (page 50)
- [sortedArrayUsingFunction:context:hint:](#) (page 51)
- [sortedArrayUsingSelector:](#) (page 52)

Related Sample Code

FunHouse
NewsReader
Sketch-112

Declared In

NSArray.h

sortedArrayUsingFunction:context:hint:

Returns a new array that lists the receiver's elements in ascending order as defined by the comparison function *comparator*.

```
- (NSArray *)sortedArrayUsingFunction:(NSInteger (*)(id, id, void *))comparator
context:(void *)context hint:(NSData *)hint
```

Discussion

The new array contains references to the receiver's elements, not copies of them.

This method is similar to [sortedArrayUsingFunction:context:](#) (page 50), except that it uses the supplied hint to speed the sorting process. When you know the array is nearly sorted, this method is faster than [sortedArrayUsingFunction:context:](#). If you sorted a large array (N entries) once, and you don't change it much (P additions and deletions, where P is much smaller than N), then you can reuse the work you did in the original sort by conceptually doing a merge sort between the N "old" items and the P "new" items.

To obtain an appropriate hint, use [sortedArrayHint](#) (page 49). You should obtain this hint when the original array has been sorted, and keep hold of it until you need it, after the array has been modified. The hint is computed by [sortedArrayHint](#) (page 49) in $O(N)$ (where N is the number of items). This assumes that items in the array implement a `-hash` method. Given a suitable hint, and assuming that the hash function is a "good" hash function, [sortedArrayUsingFunction:context:hint:](#) (page 51) sorts the array in $O(P * \text{LOG}(P) + N)$ where P is the number of adds or deletes. This is an improvement over the unhinted sort, $O(N * \text{LOG}(N))$, when P is small.

The hint is simply an array of size N containing the N hashes. To re-sort you need internally to create a map table mapping a hash to the index. Using this map table on the new array, you can get a first guess for the indices, and then sort that. For example, a sorted array {A, B, D, E, F} with corresponding hash values {25, 96, 78, 32, 17}, may be subject to small changes that result in contents {E, A, C, B, F}. The mapping table maps the hashes {25, 96, 78, 32, 17} to the indices {#0, #1, #2, #3, #4}. If the hashes for {E, A, C, B, F} are {32, 25, 99, 96, 17}, then by using the mapping table you can get a first order sort {#3, #0, #1, #4}, so therefore create an initial semi-sorted array {A, B, E, F}, and then perform a cheap merge sort with {C} that yields {A, B, C, E, F}.

Availability

Available in Mac OS X v10.0 and later.

See Also

- [sortedArrayUsingDescriptors:](#) (page 50)
- [sortedArrayUsingFunction:context:](#) (page 50)
- [sortedArrayUsingSelector:](#) (page 52)

Declared In

NSArray.h

sortedArrayUsingSelector:

Returns an array that lists the receiver's elements in ascending order, as determined by the comparison method specified by a given selector.

- (NSArray *)sortedArrayUsingSelector:(SEL) *comparator*

Parameters

comparator

A selector that identifies the method to use to compare two elements at a time. The method should return `NSOrderedAscending` if the receiver is smaller than the argument, `NSOrderedDescending` if the receiver is larger than the argument, and `NSOrderedSame` if they are equal.

Return Value

An array that lists the receiver's elements in ascending order, as determined by the comparison method specified by the selector *comparator*.

Discussion

The new array contains references to the receiver's elements, not copies of them.

The *comparator* message is sent to each object in the array and has as its single argument another object in the array.

For example, an array of `NSString` objects can be sorted by using the `caseInsensitiveCompare:` method declared in the `NSString` class. Assuming *anArray* exists, a sorted version of the array can be created in this way:

```
NSArray *sortedArray =
    [anArray sortedArrayUsingSelector:@selector(caseInsensitiveCompare:)];
```

Availability

Available in Mac OS X v10.0 and later.

See Also

- [sortedArrayUsingDescriptors:](#) (page 50)
- [sortedArrayUsingFunction:context:](#) (page 50)
- [sortedArrayUsingFunction:context:hint:](#) (page 51)

Related Sample Code

CoreRecipes

Dicey

EnhancedAudioBurn

ImageApp

Declared In

NSArray.h

sortedArrayWithOptions:usingComparator:

Returns an array that lists the receiver's elements in ascending order, as determined by the comparison method specified by a given `NSComparator` Block.

```
- (NSArray *)sortedArrayWithOptions:(NSSortOptions)opts
    usingComparator:(NSComparator)cmptr
```

Parameters

opts

A bitmask that specifies the options for the sort (whether it should be performed concurrently and whether it should be performed stably).

cmptr

A comparator block.

Return Value

An array that lists the receiver's elements in ascending order, as determined by the comparison method specified *cmptr*.

Availability

Available in Mac OS X v10.6 and later.

Declared In

NSArray.h

subarrayWithRange:

Returns a new array containing the receiver's elements that fall within the limits specified by a given range.

- (NSArray *)subarrayWithRange:(NSRange) *range*

Parameters

range

A range within the receiver's range of elements.

Return Value

A new array containing the receiver's elements that fall within the limits specified by *range*.

Discussion

If *range* isn't within the receiver's range of elements, an `NSRangeException` is raised.

For example, the following code example creates an array containing the elements found in the first half of *wholeArray* (assuming *wholeArray* exists).

```
NSArray *halfArray;
NSRange theRange;

theRange.location = 0;
theRange.length = [wholeArray count] / 2;

halfArray = [wholeArray subarrayWithRange:theRange];
```

Availability

Available in Mac OS X v10.0 and later.

Declared In

NSArray.h

valueForKey:

Returns an array containing the results of invoking `valueForKey:` using *key* on each of the receiver's objects.

- (id)valueForKey:(NSString *) *key*

Parameters

key

The key to retrieve.

Return Value

The value of the retrieved key.

Discussion

The returned array contains `NSNull` elements for each object that returns `nil`.

Availability

Available in Mac OS X v10.3 and later.

See Also

- [setValue:forKey:](#) (page 48)

Related Sample Code

Core Data HTML Store

CoreRecipes

SimpleStickies

Declared In

NSKeyValueCoding.h

writeToFile:atomically:

Writes the contents of the receiver to a file at a given path.

```
- (BOOL)writeToFile:(NSString *)path atomically:(BOOL)flag
```

Parameters*path*

The path at which to write the contents of the receiver.

If *path* contains a tilde (~) character, you must expand it with `stringByExpandingTildeInPath` before invoking this method.*flag*If YES, the array is written to an auxiliary file, and then the auxiliary file is renamed to *path*. If NO, the array is written directly to *path*. The YES option guarantees that *path*, if it exists at all, won't be corrupted even if the system should crash during writing.**Return Value**

YES if the file is written successfully, otherwise NO.

Discussion

If the receiver's contents are all property list objects (NSString, NSData, NSArray, or NSDictionary objects), the file written by this method can be used to initialize a new array with the class method `arrayWithContentsOfFile:` (page 15) or the instance method `initWithContentsOfFile:` (page 40). This method recursively validates that all the contained objects are property list objects before writing out the file, and returns NO if all the objects are not property list objects, since the resultant file would not be a valid property list.

Availability

Available in Mac OS X v10.0 and later.

See Also- `initWithContentsOfFile:` (page 40)**Declared In**

NSArray.h

writeToURL:atomically:

Writes the contents of the receiver to the location specified by a given URL.

```
- (BOOL)writeToURL:(NSURL *)aURL atomically:(BOOL)flag
```

Parameters*aURL*

The location at which to write the receiver.

flag

If YES, the array is written to an auxiliary location, and then the auxiliary location is renamed to *aURL*. If NO, the array is written directly to *aURL*. The YES option guarantees that *aURL*, if it exists at all, won't be corrupted even if the system should crash during writing.

Return Value

YES if the location is written successfully, otherwise NO.

Discussion

If the receiver's contents are all property list objects (NSString, NSData, NSArray, or NSDictionary objects), the location written by this method can be used to initialize a new array with the class method [arrayWithContentsOfURL:](#) (page 16) or the instance method [initWithContentsOfURL:](#) (page 40).

Availability

Available in Mac OS X v10.0 and later.

See Also- [initWithContentsOfURL:](#) (page 40)**Declared In**

NSArray.h

Constants

NSBinarySearchingOptions

Options for searches and insertions using

[indexOfObject:inSortedRange:options:usingComparator:](#) (page 34).

```
enum {
    NSBinarySearchingFirstEqual = (1 << 8),
    NSBinarySearchingLastEqual = (1 << 9),
    NSBinarySearchingInsertionIndex = (1 << 10),
};
typedef NSUInteger NSBinarySearchingOptions;
```

Constants

NSBinarySearchingFirstEqual

Specifies that the search should return the first object in the range that is equal to the given object.

Available in Mac OS X v10.6 and later.

Declared in NSArray.h.

NSBinarySearchingLastEqual

Specifies that the search should return the last object in the range that is equal to the given object.

Available in Mac OS X v10.6 and later.

Declared in NSArray.h.

`NSBinarySearchingInsertionIndex`

Returns the index at which you should insert the object in order to maintain a sorted array.

Available in Mac OS X v10.6 and later.

Declared in `NSArray.h`.

Deprecated NSArray Methods

A method identified as deprecated has been superseded and may become unsupported in the future.

Deprecated in Mac OS X v10.6

getObjects:

Copies all the objects contained in the receiver to *aBuffer*. (Deprecated in Mac OS X v10.6.)

```
- (void)getObjects:(id *)aBuffer
```

Parameters

aBuffer

A C array of objects of size at least the count of the receiver.

Discussion

The method copies into *aBuffer* all the objects in the receiver; the size of the buffer must therefore be at least the count of the receiver multiplied by the size of an object reference, as shown in the following example (note that this is just an example, you should typically not create a buffer simply to iterate over the contents of an array):

```
NSArray *mArray = // ...;
id *objects;

NSUInteger count = [mArray count];
objects = malloc(sizeof(id) * count);

[mArray getObjects:objects];

for (i = 0; i < count; i++) {
    NSLog(@"object at index %d: %@", i, objects[i]);
}
free(objects);
```

Availability

Available in Mac OS X v10.0 and later.

Deprecated in Mac OS X v10.6.

See Also

+ [arrayWithObjects:count:](#) (page 18)

Declared In

NSArray.h

Document Revision History

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

Date	Notes
2010-04-29	Clarified description of <code>indexOfObjectWithOptions:passingTest:</code> method.
2009-11-17	Corrected declarations of several block object parameters.
2009-10-19	Added information to methods that use Blocks with the <code>BOOL *stop</code> parameter.
2008-10-03	Updated for Mac OS X v10.6.
2007-10-31	Added a link to "NSMutableArray Class Reference."
2007-05-03	Added definitions for key-value observing methods.
2007-04-02	Updated for Mac OS X v10.5.
2006-07-24	Clarified description of <code>filteredArrayUsingPredicate:</code> .
2006-05-23	First publication of this content as a separate document.

REVISION HISTORY

Document Revision History