# NSCopying Protocol Reference

**Cocoa > Objective-C Language**

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# NSCopying Protocol Reference

| | |
|---|---|
| **Adopted by** | Various Cocoa classes |
| **Framework** | /System/Library/Frameworks/Foundation.framework |
| **Availability** | Available in Mac OS X v10.0 and later. |
| **Companion guide** | Memory Management Programming Guide for Cocoa |
| **Declared in** | NSObject.h |

## Overview

The `NSCopying` protocol declares a method for providing functional copies of an object. The exact meaning of "copy" can vary from class to class, but a copy must be a functionally independent object with values identical to the original at the time the copy was made. A copy produced with `NSCopying` is implicitly retained by the sender, who is responsible for releasing it.

`NSCopying` declares one method, `copyWithZone:` (page 6), but copying is commonly invoked with the convenience method `copy`. The `copy` method is defined for all objects inheriting from `NSObject` and simply invokes `copyWithZone:` (page 6) with the default zone.

Your options for implementing this protocol are as follows:

- Implement `NSCopying` using `alloc` and `init...` in classes that don't inherit `copyWithZone:` (page 6).
- Implement `NSCopying` by invoking the superclass's `copyWithZone:` (page 6) when `NSCopying` behavior is inherited. If the superclass implementation might use the `NSCopyObject` function, make explicit assignments to pointer instance variables for retained objects.
- Implement `NSCopying` by retaining the original instead of creating a new copy when the class and its contents are immutable.

If a subclass inherits NSCopying from its superclass and declares additional instance variables, the subclass has to override `copyWithZone:` (page 6) to properly handle its own instance variables, invoking the superclass's implementation first.


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# Tasks

## Copying

`- copyWithZone:` (page 6)
Returns a new instance that's a copy of the receiver.

# Instance Methods

## copyWithZone:

Returns a new instance that's a copy of the receiver.

```
- (id)copyWithZone:(NSZone *)zone
```

**Parameters**

*zone*

The zone identifies an area of memory from which to allocate for the new instance. If *zone* is `NULL`, the new instance is allocated from the default zone, which is returned from the function `NSDefaultMallocZone`.

**Discussion**
The returned object is implicitly retained by the sender, who is responsible for releasing it. The copy returned is immutable if the consideration "immutable vs. mutable" applies to the receiving object; otherwise the exact nature of the copy is determined by the class.

**Availability**
Available in Mac OS X v10.0 and later.

**See Also**
`- mutableCopyWithZone:` (NSMutableCopying protocol)
`- copy` (NSObject class)

**Declared In**
`NSObject.h`


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# Document Revision History

This table describes the changes to *NSCopying Protocol Reference*.

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



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Document Revision History



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## C

`copyWithZone:` protocol instance method 6



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