
Sort Descriptor Programming Topics

[Cocoa > Data Management](#)



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Apple Inc.
1 Infinite Loop
Cupertino, CA 95014
408-996-1010

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Contents

Introduction to Sort Descriptors 7

Organization of This Document 7

Creating and Using Sort Descriptors 9

Specifying Sorts Using NSSortDescriptor 9

Specifying Custom Comparisons 10

Requirements of Collection Objects 11

Document Revision History 13

Tables and Listings

Creating and Using Sort Descriptors 9

Table 1	Common Foundation classes and comparison methods	10
Listing 1	Sorting the array by the age key	9
Listing 2	Sorting the array by the age and date of hire keys	9
Listing 3	Sorting the array using a localized case insensitive comparison	10

Introduction to Sort Descriptors

This document describes how to use sort descriptors. Sort descriptors specify how a collection of objects are sorted.

Organization of This Document

This programming topic contains the following articles:

- [“Creating and Using Sort Descriptors”](#) (page 9) describes how to create and use sort descriptors.

Creating and Using Sort Descriptors

A sort descriptor describes a comparison used to sort a collection of objects. You create an instance of `NSSortDescriptor` that specifies the property key to be sorted, and whether the comparison should be in ascending, or descending order. A sort descriptor can also specify a method to use when comparing the property key values, rather than the default of `compare:`.

It is important to remember that `NSSortDescriptor` does not sort objects. It provides the description of how to sort objects. The actual sorting is done by other classes, often `NSArray` or `NSMutableArray`.

Specifying Sorts Using `NSSortDescriptor`

Let's assume, as an example, that we have an array (an instance of `NSArray`) containing instances of a custom class, `Employee` (that meets the requirements set out in ["Requirements of Collection Objects"](#) (page 11)). The `Employee` class has attributes for an employee's first and last name (instances of `NSString`), date of hire (an instance of `NSDate`), and age (an instance of `NSNumber`).

Our first task is to return an `NSArray` object sorted using the age. The example in Listing 1 illustrates how to create an `NSSortDescriptor` that can be used to sort the array contents in ascending order by the age key.

Listing 1 Sorting the array by the age key

```
ageDescriptor = [[[NSSortDescriptor alloc] initWithKey:@"age"
                                                    ascending:YES] autorelease];
sortDescriptors = [NSArray arrayWithObject:ageDescriptor];
sortedArray = [employeesArray sortedArrayUsingDescriptors:sortDescriptors];
```

You'll note that when sorting the array it was necessary to provide an array of `NSSortDescriptor` instances. Each of the sort descriptors are applied in sequence, providing a means of sorting on multiple property keys.

If we also wanted to sort by the date of hire, we can add another descriptor to the array we provide to `sortedArrayUsingDescriptors:`. The example in Listing 2 demonstrates using multiple sort descriptors to sort on the age, and then sort employees of the same age by their date of hire.

Listing 2 Sorting the array by the age and date of hire keys

```
ageDescriptor = [[[NSSortDescriptor alloc] initWithKey:@"age"
                                                    ascending:YES] autorelease];
hireDateDescriptor = [[[NSSortDescriptor alloc] initWithKey:@"hireDate"
                                                            ascending:YES] autorelease];
sortDescriptors = [NSArray arrayWithObjects:ageDescriptor, hireDateDescriptor,
                  nil];
sortedArray = [employeesArray sortedArrayUsingDescriptors:sortDescriptors];
```


Requirements of Collection Objects

In order for a collection to be able to sort its contents using `NSSortDescriptor`, the objects must conform to the following expectations.

- Each object in the collection must be key-value coding-compliant for the property key used to create the sort descriptor (for more about key-value coding, see *Key-Value Coding Programming Guide*).
- The object at the specified property key, relative to each object in the collection, must implement the compare selector used to create the sort descriptor. If no custom selector was specified, the objects must implement `compare:`.
- The selector used for the comparison is passed a single parameter, the object to compare against `self`, and must return the appropriate `NSComparisonResult`.

Attempting to sort a collection containing objects that fail any of these requirements will raise an exception.

Document Revision History

This table describes the changes to *Sort Descriptor Programming Topics*.

Date	Notes
2007-07-10	Changed string-based examples to use localized comparisons.
2003-08-08	First release of conceptual and task material covering the usage of new classes in Mac OS X v10.3 for specifying collection sorting.

