CFBitVector Reference

Core Foundation

2005-12-06

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Simultaneously published in the United States and Canada.

Contents

CFBitVector Reference

Derived From:	CFType
Framework:	CoreFoundation/CoreFoundation.h
Companion guide	Collections Programming Topics for Core Foundation
Declared in	CFBitVector.h

Overview

CFBitVector and its derived mutable type, CFMutableBitVector, manage ordered collections of bit values, which are either `0` or `1`. CFBitVector creates static bit vectors and CFMutableBitVector creates dynamic bit vectors.

Functions by Task

Creating a Bit Vector

`CFBitVectorCreate` (page 6)
Creates an immutable bit vector from a block of memory.

`CFBitVectorCreateCopy` (page 7)
Creates an immutable bit vector that is a copy of another bit vector.

Getting Information About a Bit Vector

`CFBitVectorContainsBit` (page 6)
Returns whether a bit vector contains a particular bit value.

`CFBitVectorGetBitAtIndex` (page 8)
Returns the bit value at a given index in a bit vector.

`CFBitVectorGetBits` (page 8)
Returns the bit values in a range of indices in a bit vector.

`CFBitVectorGetCount` (page 8)
Returns the number of bit values in a bit vector.

`CFBitVectorGetCountOfBit` (page 9)
Counts the number of times a certain bit value occurs within a range of bits in a bit vector.

Getting the CFBitVector Type ID

Functions

CFBitVectorContainsBit

Returns whether a bit vector contains a particular bit value.

```
Boolean CFBitVectorContainsBit (
   CFBitVectorRef bv,
   CFRange range,
   CFBit value
);
```

Parameters

bv
The bit vector to search.

range
The range of bits in *bv* to search.

value
The bit value for which to search.

Return Value
`true` if the specified range of bits in *bv* contains *value*, otherwise `false`.

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

Declared In
`CFBitVector.h`

CFBitVectorCreate

Creates an immutable bit vector from a block of memory.

```
CFBitVectorRef CFBitVectorCreate (
   CFAllocatorRef allocator,
   const UInt8 *bytes,
   CFIndex numBits
);
```

Parameters

allocator

The allocator to use to allocate memory for the new bit vector. Pass `NULL` or `kCFAllocatorDefault` to use the current default allocator.

bytes

A pointer to the bit values to store in the new bit vector. The values are copied into the bit vector's own memory. The bit indices are numbered left-to-right with `0` being the left-most, or most-significant, bit in the byte stream.

numBits

The number of bits in the bit vector.

Return Value
A new bit vector. Ownership follows the Create Rule.

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

Declared In
`CFBitVector.h`

CFBitVectorCreateCopy

Creates an immutable bit vector that is a copy of another bit vector.

```
CFBitVectorRef CFBitVectorCreateCopy (
   CFAllocatorRef allocator,
   CFBitVectorRef bv
);
```

Parameters

allocator

The allocator to use to allocate memory for the new bit vector. Pass `NULL` or `kCFAllocatorDefault` to use the current default allocator.

bv

The bit vector to copy.

Return Value
A new bit vector holding the same bit values as *bv*. Ownership follows the Create Rule.

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

Declared In
`CFBitVector.h`

CFBitVectorGetBitAtIndex

Returns the bit value at a given index in a bit vector.

```
CFBit CFBitVectorGetBitAtIndex (
   CFBitVectorRef bv,
   CFIndex idx
);
```

Parameters

bv

The bit vector to examine.

idx

The index of the bit value in *bv* to return.

Return Value

The bit value at index *idx* in *bv*.

Availability

Available in Mac OS X v10.0 and later.

Declared In

CFBitVector.h

CFBitVectorGetBits

Returns the bit values in a range of indices in a bit vector.

```
void CFBitVectorGetBits (
   CFBitVectorRef bv,
   CFRange range,
   UInt8 *bytes
);
```

Parameters

bv

The bit vector to examine.

range

The range of bit values to return.

bytes

On return, contains the requested bit values from *bv*. This argument must point to enough memory to hold the number of bits requested. The requested bits are left-aligned with the first requested bit stored in the left-most, or most-significant, bit of the byte stream.

Availability

Available in Mac OS X v10.0 and later.

Declared In

CFBitVector.h

CFBitVectorGetCount

Returns the number of bit values in a bit vector.

```
CFIndex CFBitVectorGetCount (
   CFBitVectorRef bv
);
```

Parameters

bv

The bit vector to examine.

Return Value
The current size of *bv*.

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

Declared In
CFBitVector.h

CFBitVectorGetCountOfBit

Counts the number of times a certain bit value occurs within a range of bits in a bit vector.

```
CFIndex CFBitVectorGetCountOfBit (
   CFBitVectorRef bv,
   CFRange range,
   CFBit value
);
```

Parameters

bv

The bit vector to examine.

range

The range of bits in *bv* to search.

value

The bit value to count.

Return Value
The number of occurrences of *value* in the specified range of *bv*.

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

Declared In
CFBitVector.h

CFBitVectorGetFirstIndexOfBit

Locates the first occurrence of a certain bit value within a range of bits in a bit vector.

```
CFIndex CFBitVectorGetFirstIndexOfBit (
   CFBitVectorRef bv,
   CFRange range,
   CFBit value
);
```

Parameters

bv

The bit vector to examine.

range

The range of bits in *bv* to search.

value

The bit value for which to search.

Return Value

The index of the first occurrence of *value* in the specified range of *bv*, or `kCFNotFound` if *value* is not present.

Availability

Available in Mac OS X v10.0 and later.

Declared In

`CFBitVector.h`

CFBitVectorGetLastIndexOfBit

Locates the last occurrence of a certain bit value within a range of bits in a bit vector.

```
CFIndex CFBitVectorGetLastIndexOfBit (
   CFBitVectorRef bv,
   CFRange range,
   CFBit value
);
```

Parameters

bv

The bit vector to examine.

range

The range of bits in *bv* to search.

value

The bit value for which to search.

Return Value

The index of the last occurrence of *value* in the specified range of *bv*, or `kCFNotFound` if *value* is not present.

Availability

Available in Mac OS X v10.0 and later.

Declared In

`CFBitVector.h`

CFBitVectorGetTypeID

Returns the type identifier for the CFBitVector opaque type.

```
CFTypeID CFBitVectorGetTypeID (
   void
);
```

Return Value
The type identifier for the CFBitVector opaque type.

Discussion
CFMutableBitVector objects have the same type identifier as CFBitVector objects.

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

Declared In
`CFBitVector.h`

Data Types

CFBit

A binary value of either `0` or `1`.

```
typedef UInt32 CFBit;
```

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

Declared In
`CFBitVector.h`

CFBitVectorRef

A reference to an immutable bit vector object.

```
typedef const struct __CFBitVector *CFBitVectorRef;
```

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

Declared In
`CFBitVector.h`

Document Revision History

This table describes the changes to *CFBitVector Reference*.

Date	Notes
2005-12-06	Clarified the return value of CFBitVectorGetFirstIndexOfBit and CFBitVectorGetLastIndexOfBit.
2005-08-11	Cosmetic changes to conform to documentation guidelines.
2003-01-01	First version of this document.

Document Revision History

Index

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