

# Package ‘index0’

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**Title** Zero-Based Indexing in R

**Version** 0.0.1

**Description**

Extract and replace elements using indices that start from zero (rather than one), as is common in mathematical notation and other programming languages.

**License** MIT + file LICENSE

**Language** en-GB

**Encoding** UTF-8

**RoxygenNote** 7.1.2

**Suggests** testthat (>= 3.0.0)

**Config/testthat/edition** 3

**NeedsCompilation** no

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head.index0

*Return the First or Last Parts of a Zero-Indexed Object*

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**Description**

Works like `utils::head()` and `utils::tail()`.

**Usage**

```
## S3 method for class 'index0'  
head(x, ...)
```

```
## S3 method for class 'index0'  
tail(x, ...)
```

**Arguments**

x	An index0 object
...	Other arguments, passed to generic function

**Details**

Just because an object is zero-indexed, doesn't mean that the definition of, for example, "the first 5 elements" or "the last two elements" has changed. Thus we add methods `head()` and `tail()` to ensure they behave as normal.

**Value**

An index0 object

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index0*Zero-based indexing of vectors*

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**Description**

Normally R is indexed from 1, but with the special `index0` class, you can have vectors that are indexed from zero. Works both for subsetting (extraction) and (sub-)assignment. An `index0` object is just like a normal vector or matrix, but `x[i]` returns or replaces the  $(i+1)$ th index.

**Usage**

```
## S3 method for class 'index0'  
x[i, j, ...]  
  
## S3 replacement method for class 'index0'  
x[i, j, ...] <- value  
  
as.index0(x)  
  
as.index1(x)  
  
is.index0(x)  
  
index_from_0(x)  
  
## S3 method for class 'index0'  
print(x, ...)
```

**Arguments**

x	object from which to extract element(s) or in which to replace element(s)
i, j	indices specifying elements to extract or replace. Starting from 1.
...	other arguments passed to generic methods.
value	typically an array-like R object of a similar class as x.

**Details**

Assign the class `index0` to a vector, using `as.index0()` or `index_from_0()`, then use the subset operators normally and they will be indexed from zero. You can reverse the operation (reset to indexing from 1) with `as.index1()` or by manually removing the `index0` class. Character indices *seem* to be unaffected. Be cautious with logical indices. See examples.

**Value**

`as.index0` returns the input (typically a vector or matrix) unchanged except for the addition of an `index0` class attribute, which enables the zero-based indexing behaviour. Use `as.index1` to remove this class again, if present.

If `x` is a zero-indexed object with class `index0`, then `x[i]` returns an appropriate subset of `x`. The returned subset is also zero-indexed. `x[i] <- value` changes the *i*th element (effectively (*i*+1)th element in ordinary R code) in place.

`is.index0(x)` returns TRUE if `x` is indexed from zero, otherwise FALSE.

**Source**

Partially inspired by this Stack Overflow answer: [Zero based arrays/vectors in R](#)

**Examples**

```
# Vectors
v <- as.index0(letters)
v[0:3]
v[c(0, 2)] <- c('zeroth', 'second')
v

# Matrices and arrays
m <- index_from_0(matrix(1:4, 2))
m[0, 1]
m[0, 1] <- 99
m
```

# Index

`[.index0 (index0), 2`  
`[<-.index0 (index0), 2`

`as.index0 (index0), 2`  
`as.index1 (index0), 2`

`head.index0, 2`

`index0, 2`  
`index_from_0 (index0), 2`  
`is.index0 (index0), 2`

`print.index0 (index0), 2`

`tail.index0 (head.index0), 2`

`utils::head(), 2`  
`utils::tail(), 2`