Package: index0 (via r-universe)

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Title Zero-Based Indexing in R

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

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c.index0 *Combine zero-indexed vectors*

Description

When combining vectors, if the first argument to `c()` is zero-indexed, then the result will be zero-indexed as well. Otherwise, the output will revert to default R behaviour of indexing from 1.

Usage

```
## S3 method for class 'index0'
c(...)
```

Arguments

`...`	objects to be concatenated. All `NULL` entries are dropped.

Value

A zero-indexed vector of class index0.

See Also

`base::c()`

Examples

```
x <- as.index0(1:5)
y <- as.index0(6:10)
c(x, y)
c(1:5, y)
```

head.index0 *Return the First or Last Parts of a Zero-Indexed Object*

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*

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)
```

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
```

`print` *Print Zero-Indexed Values*

Description

When printing zero-indexed objects, it only seems fair that the printed output is zero-indexed as well. So we replace those little numbers in square brackets so that they start from zero.

Usage

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

## S3 method for class 'index0'
str(object, ...)
```

Arguments

x, object	An object to inspect/print, of class index0.
...	Other arguments, passed to generic function

Note

Not yet implemented for matrices, arrays or data frames.

See Also

base::print, utils::str

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