

Foundations of R Software

Lecture 28

Repeats

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Repeats

The `rep()` function replicates numeric values, or text, or the values of a vector for a specific number of times.

Command `rep` is used to replicates the values in a vector.

Syntax `rep(x)` replicates the values in a vector `x`.

`rep(x, times=n)` # Repeat `x` as a whole `n` times

`rep(x, each=n)` # Repeat each cell `n` times

Repeats

Following commands repeat each cell for the desired length of the output vector

```
rep(x, length.out=n)
```

```
rep(x, length=n)
```

```
rep_len(x, length.out)
```

Repeats

Help for the command **rep**

> help("rep")

127.0.0.1:13069/library/base/html/rep.html

rep {base}

R Documentati

Replicate Elements of Vectors and Lists

Description

`rep` replicates the values in `x`. It is a generic function, and the (internal) default method is described here.

`rep.int` and `rep_len` are faster simplified versions for two common cases. They are not generic.

Usage

```
rep(x, ...)
```

```
rep.int(x, times)
```

```
rep_len(x, length.out)
```

Arguments

- `x` a vector (of any mode including a list) or a factor or (for `rep` only) a `POSIXct` or `POSIXlt` or `Date` object; or an S4 object containing such an object.
- `...` further arguments to be passed to or from other methods. For the internal default method these can include:
 - `times`

Repeats

The command `rep`

Repeat an object n -times:

```
> rep(3.5, times=10)
```

```
[1] 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5
```

```
> rep(1:4, 2)
```

```
[1] 1 2 3 4 1 2 3 4
```

R Console

```
> rep(3.5, times=10)
```

```
[1] 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5
```

```
>
```

```
> rep(1:4, 2)
```

```
[1] 1 2 3 4 1 2 3 4
```

Repeats

Repeat an object n -times:

`rep(x, times = n)`

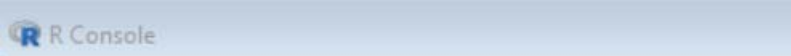
Repeat each cell n -times:

`rep(x, each = n)`

```
> x = 1:4  
> x  
[1] 1 2 3 4
```

```
> rep(x, times = 3)  
[1] 1 2 3 4 1 2 3 4 1 2 3 4
```

```
> rep(x, each = 3)  
[1] 1 1 1 2 2 2 3 3 3 4 4 4
```



```
R Console  
> x = 1:4  
> x  
[1] 1 2 3 4  
> rep(x, times = 3)  
[1] 1 2 3 4 1 2 3 4 1 2 3 4  
> rep(x, each = 3)  
[1] 1 1 1 2 2 2 3 3 3 4 4 4  
> |
```

Repeats

Every object is repeated several times successively:

```
> rep(1:4, each = 2)
```

```
[1] 1 1 2 2 3 3 4 4
```

```
> rep(1:4, each = 2, times = 3)
```

```
[1] 1 1 2 2 3 3 4 4 1 1 2 2 3 3 4 4 1 1 2 2 3 3 4 4
```

```
> rep(1:4, times = 3, each = 2)
```

```
[1] 1 1 2 2 3 3 4 4 1 1 2 2 3 3 4 4 1 1 2 2 3 3 4 4
```

Observe the effect of ordering of **each** and **times**.

Repeats

R Console

```
> rep(1:4, each = 2)
[1] 1 1 2 2 3 3 4 4
> rep(1:4, each = 2, times = 3)
[1] 1 1 2 2 3 3 4 4 1 1 2 2 3 3 4 4 1 1 2 2 3 3 4 4
> rep(1:4, times = 3, each = 2)
[1] 1 1 2 2 3 3 4 4 1 1 2 2 3 3 4 4 1 1 2 2 3 3 4 4
> |
```

Repeats

Every object is repeated a different number of times:

```
> rep(1:4, 2:5)
```

```
[1] 1 1 2 2 2 3 3 3 3 4 4 4 4 4
```

R Console

```
> rep(1:4, 2:5)
```

```
[1] 1 1 2 2 2 3 3 3 3 4 4 4 4 4
```

Repeats

Every object is repeated a different number of times:

```
> ans = seq(from=2, to=8, by=2)
```

```
> ans
```

```
[1] 2 4 6 8
```

```
> rep(1:4, ans)
```

```
[1] 1 1 2 2 2 2 3 3 3 3 3 3 4 4 4 4 4 4 4 4
```

```
R Console
> ans = seq(from=2, to=8, by=2)
> ans
[1] 2 4 6 8
>
> rep(1:4, ans)
[1] 1 1 2 2 2 2 3 3 3 3 3 3 4 4 4 4 4 4 4 4
> |
```

Repeats

```
> x = matrix(nrow=2, ncol=2, data=1:4, byrow=T)
```

```
> x
```

```
      [,1] [,2]  
[1,]    1    2  
[2,]    3    4
```

```
> rep(x, 3)
```

```
[1] 1 3 2 4 1 3 2 4 1 3 2 4
```

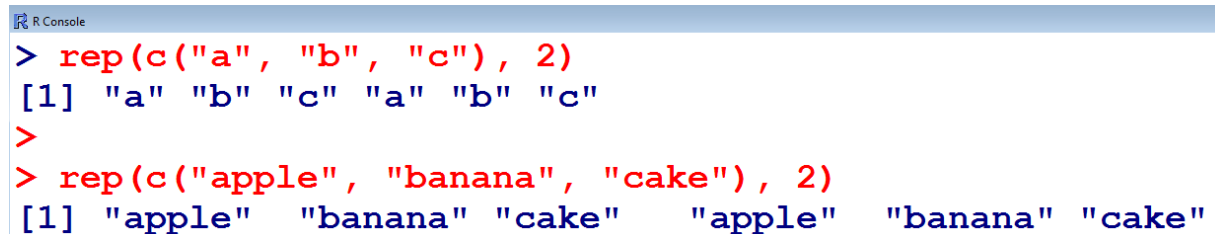
```
R Console  
  
> x = matrix(nrow=2, ncol=2, data=1:4, byrow=T)  
> x  
      [,1] [,2]  
[1,]    1    2  
[2,]    3    4  
> rep(x, 3)  
[1] 1 3 2 4 1 3 2 4 1 3 2 4  
> |
```

Repeats

Repetition of characters

```
> rep(c("a", "b", "c"), 2)  
[1] "a" "b" "c" "a" "b" "c"
```

```
> rep(c("apple", "banana", "cake"), 2)  
[1] "apple" "banana" "cake" "apple" "banana" "cake"
```

A screenshot of an R console window with a light blue header bar containing the R logo and the text "R Console". The console shows two R commands and their outputs. The first command is > rep(c("a", "b", "c"), 2) followed by the output [1] "a" "b" "c" "a" "b" "c". The second command is > rep(c("apple", "banana", "cake"), 2) followed by the output [1] "apple" "banana" "cake" "apple" "banana" "cake".

```
> rep(c("a", "b", "c"), 2)  
[1] "a" "b" "c" "a" "b" "c"  
>  
> rep(c("apple", "banana", "cake"), 2)  
[1] "apple" "banana" "cake" "apple" "banana" "cake"
```

Repeats

Repetition of characters for pre-specified length

```
> rep(2, length.out=5)
```

```
[1] 2 2 2 2 2
```

```
> rep(2, length=5)
```

```
[1] 2 2 2 2 2
```

```
> rep(c(2,3), length=5)
```

```
[1] 2 3 2 3 2
```

```
> rep(c(2,3,4), length=5)
```

```
[1] 2 3 4 2 3
```

R Console

```
> rep(2, length.out=5)
[1] 2 2 2 2 2
> rep(2, length=5)
[1] 2 2 2 2 2
>
> rep(c(2,3), length=5)
[1] 2 3 2 3 2
>
> rep(c(2,3,4), length=5)
[1] 2 3 4 2 3
```

Repeats

Repetition of characters for pre-specified length

```
> rep("apple", length=5)
```

```
[1] "apple" "apple" "apple" "apple" "apple"
```

```
> rep(c("a", "b", "c"), length=2)
```

```
[1] "a" "b"
```

```
> rep(c("a", "b", "c"), length=5)
```

```
[1] "a" "b" "c" "a" "b"
```

Repeats

Repetition of characters for pre-specified length

R Console

```
> rep("apple", length=5)
[1] "apple" "apple" "apple" "apple" "apple"
>
> rep(c("a", "b", "c"), length=2)
[1] "a" "b"
>
> rep(c("a", "b", "c"), length=5)
[1] "a" "b" "c" "a" "b"
> |
```