

Foundations of R Software

Lecture 25

Sequences

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Sequences

A sequence is a set of related numbers, events, movements, or items that follow each other in a particular order.

The regular sequences can be generated in R.

Syntax

`seq()`

```
seq(from = 1, to = 1,  
by = ((to - from)/(length.out - 1)),  
length.out = NULL, along.with = NULL, ...)
```

Help for `seq`

```
> help("seq")
```

Sequences

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

R Documentation

seq {base}

Sequence Generation

Description

Generate regular sequences. `seq` is a standard generic with a default method. `seq.int` is a primitive which can be much faster but has a few restrictions. `seq_along` and `seq_len` are very fast primitives for two common cases.

Usage

```
seq(...)  
  
## Default S3 method:  
seq(from = 1, to = 1, by = ((to - from)/(length.out - 1)),  
    length.out = NULL, along.with = NULL, ...)  
  
seq.int(from, to, by, length.out, along.with, ...)  
  
seq_along(along.with)  
seq_len(length.out)
```

Arguments

... arguments passed to or from methods.
from, to the starting and (maximal) end values of the sequence. Of length 1 unless just `from` is supplied as an unnamed argument.



Sequences

□ The default increment is +1 or -1

```
> seq(from=2, to=4)
```

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

```
> seq(from=4, to=2)
```

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

```
> seq(from=-4, to=4)
```

```
[1] -4 -3 -2 -1 0 1 2 3 4
```

```
R Console
> seq(from=2, to=4)
[1] 2 3 4
>
> seq(from=4, to=2)
[1] 4 3 2
>
> seq(from=-4, to=4)
[1] -4 -3 -2 -1 0 1 2 3 4
```

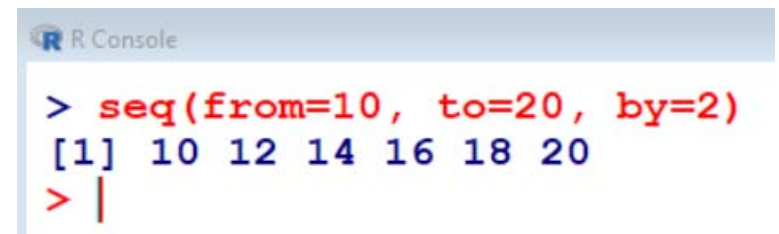
Sequences

□ Sequence with constant increment:

Generate a sequence from 10 to 20 with an increment of 2 units

```
> seq(from=10, to=20, by=2)
```

```
[1] 10 12 14 16 18 20
```

A screenshot of an R console window. The title bar says "R Console". The prompt ">" is followed by the command "seq(from=10, to=20, by=2)" in red. The output "[1] 10 12 14 16 18 20" is shown in blue. Below the output, the prompt ">" is followed by a vertical bar "|", indicating the cursor is ready for the next command.

```
> seq(from=10, to=20, by=2)
[1] 10 12 14 16 18 20
> |
```

Sequences

❑ Sequence with constant decrement:

Generate a sequence from 20 to 10 with an decrement of 2 units

```
> seq(from=20, to=10, by=-2)
```

```
[1] 20 18 16 14 12 10
```

R Console

```
> seq(from=20, to=10, by=-2)  
[1] 20 18 16 14 12 10
```

Sequences

❑ Downstream sequence with constant decrement:

Generate a sequence from 3 to -2 with a decrement of 0.5 units

```
> seq(from=3, to=-2, by=-0.5)
```

```
[1] 3.0 2.5 2.0 1.5 1.0 0.5 0.0 -0.5 -1.0 -1.5 -2
```

R Console

```
> seq(from=3, to=-2, by=-0.5)
```

```
[1] 3.0 2.5 2.0 1.5 1.0 0.5 0.0 -0.5 -1.0 -1.5 -2.0
```

Sequences

- ❑ Sequences with a predefined length with default increment +1

```
> seq(to=10, length=10)
```

```
[1] 1 2 3 4 5 6 7 8 9 10
```

R Console

```
> seq(to=10, length=10)
```

```
[1] 1 2 3 4 5 6 7 8 9 10
```

Sequences

- ❑ Sequences with a predefined length with default increment +1

> `seq(from=10, length=10)`

`[1] 10 11 12 13 14 15 16 17 18 19`

 R Console

> `seq(from=10, length=10)`

`[1] 10 11 12 13 14 15 16 17 18 19`

Sequences

- ❑ Sequences with a predefined length with constant fractional increment

```
> seq(from=10, length=10, by=0.1)
```

```
[1] 10.0 10.1 10.2 10.3 10.4 10.5 10.6 10.7 10.8 10.9
```

R Console

```
> seq(from=10, length=10, by=0.1)
```

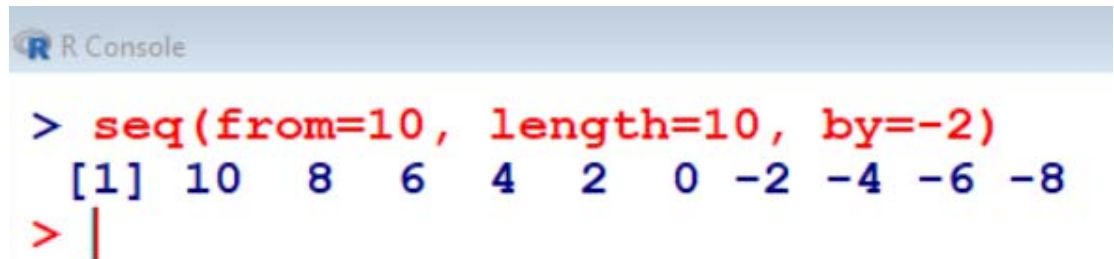
```
[1] 10.0 10.1 10.2 10.3 10.4 10.5 10.6 10.7 10.8 10.9
```

Sequences

❑ Sequences with a predefined length with constant decrement

```
> seq(from=10, length=10, by=-2)
```

```
[1] 10  8  6  4  2  0 -2 -4 -6 -8
```



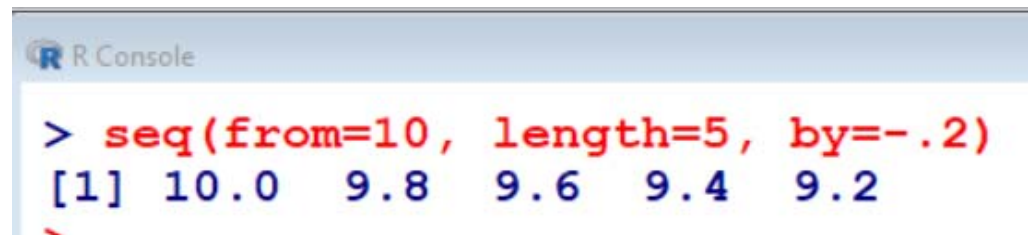
A screenshot of an R console window. The title bar says "R Console". The prompt ">" is followed by the command `seq(from=10, length=10, by=-2)` in red text. The output is displayed on the next line: `[1] 10 8 6 4 2 0 -2 -4 -6 -8`. Below the output, the prompt ">" is followed by a vertical bar character "|".

Sequences

- ❑ Sequences with a predefined length with constant fractional decrement

```
> seq(from=10, length=5, by=-.2)
```

```
[1] 10.0  9.8  9.6  9.4  9.2
```



A screenshot of an R console window. The title bar says "R Console". The prompt is ">". The command entered is "seq(from=10, length=5, by=-.2)". The output is "[1] 10.0 9.8 9.6 9.4 9.2".

```
> seq(from=10, length=5, by=-.2)
[1] 10.0  9.8  9.6  9.4  9.2
```