

Introduction to R Software

Sequences

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Sequences

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, ...)
```

Sequences

```
> seq(10)
```

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

is the same as

```
> seq(1:10)
```

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

R Console

```
> seq(10)
```

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

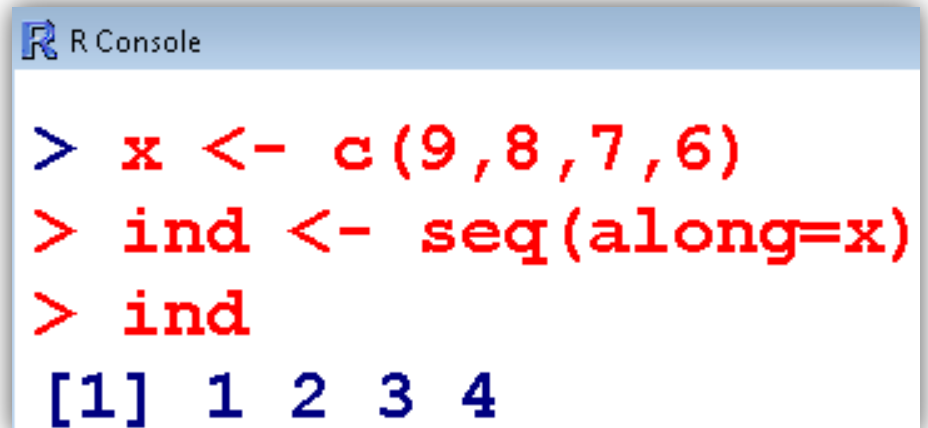
```
> seq(1:10)
```

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

Sequences

❑ Assignment of an index-vector

```
> x <- c(9,8,7,6)
> ind <- seq(along=x)
> ind
[1] 1 2 3 4
```



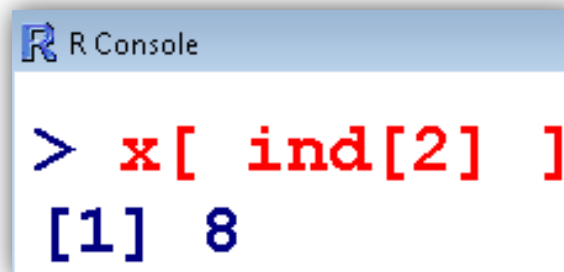
A screenshot of an R Console window with a blue header bar containing the R logo and the text "R Console". The console shows the following commands and output in red text:

```
> x <- c(9,8,7,6)
> ind <- seq(along=x)
> ind
[1] 1 2 3 4
```

Accessing a value in the vector through index vector

❑ Accessing an element of an index-vector

```
> x[ ind[2] ]
[1] 8
```



A screenshot of an R Console window with a blue header bar containing the R logo and the text "R Console". The console shows the following commands and output in red text:

```
> x[ ind[2] ]
[1] 8
```

Sequences

Generating sequences of dates

Generating current time and date

`Sys.time()` command provides the current time and date from the computer system.

```
> Sys.time()
```

```
[1] "2017-01-01 09:17:01 IST"
```

`Sys.Date()` command provides the current date from the computer system.

```
> Sys.Date()
```

```
[1] "2017-01-01"
```

Sequences

R Console

```
> Sys.time()  
[1] "2017-01-01 09:17:01 IST"  
>  
> Sys.Date()  
[1] "2017-01-01"
```

Sequences

Generating sequences of dates

Usage

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

Arguments

from starting date (Required)

to end date (Optional)

by increment of the sequence. "day", "week",
"month", "quarter" or "year".

length.out integer, optional. Desired length of the sequence.

along.with take the length from the length of this argument. 7

Sequences

Generating sequences of dates

Sequence of first day of years

```
> seq(as.Date("2010-01-01"), as.Date("2017-01-01"), by = "years")
```

```
[1] "2010-01-01" "2011-01-01" "2012-01-01" "2013-01-01"
```

```
[5] "2014-01-01" "2015-01-01" "2016-01-01" "2017-01-01"
```

R Console

```
> seq(as.Date("2010-01-01"),  
+ as.Date("2017-01-01"), by = "years")  
[1] "2010-01-01" "2011-01-01" "2012-01-01" "2013-01-01"  
[5] "2014-01-01" "2015-01-01" "2016-01-01" "2017-01-01"
```


Sequences

Generating sequences of dates

Sequence of days

```
> seq(as.Date("2017-01-01"), by = "days",  
length = 6)
```

```
[1] "2017-01-01" "2017-01-02" "2017-01-03" "2017-01-04"  
[5] "2017-01-05" "2017-01-06"
```

R Console

```
> seq(as.Date("2017-01-01"), by = "days", length = 6)  
[1] "2017-01-01" "2017-01-02" "2017-01-03" "2017-01-04"  
[5] "2017-01-05" "2017-01-06"
```

Sequences

Generating sequences of dates

Sequence of months

```
> seq(as.Date("2017-01-01"), by = "months",  
length = 6)
```

```
[1] "2017-01-01" "2017-02-01" "2017-03-01" "2017-04-01"  
[5] "2017-05-01" "2017-06-01"
```

R Console

```
> seq(as.Date("2017-01-01"), by = "months", length = 6)  
[1] "2017-01-01" "2017-02-01" "2017-03-01" "2017-04-01"  
[5] "2017-05-01" "2017-06-01"
```

Sequences

Generating sequences of dates

Sequence by years

```
> seq(as.Date("2017-01-01"), by = "years",  
length = 6)
```

```
[1] "2017-01-01" "2018-01-01" "2019-01-01" "2020-01-01"  
[5] "2021-01-01" "2022-01-01"
```

R Console

```
> seq(as.Date("2017-01-01"), by = "years", length = 6)  
[1] "2017-01-01" "2018-01-01" "2019-01-01" "2020-01-01"  
[5] "2021-01-01" "2022-01-01"
```

Sequences

Generating sequences of dates

To find sequence with defining start and end dates

```
> startdate <- as.Date("2016-1-1")  
> enddate <- as.Date("2017-1-1")  
  
> out <- seq(enddate, startdate, by = "-1  
month")  
[1] "2017-01-01" "2016-12-01" "2016-11-01" "2016-10-01"  
[5] "2016-09-01" "2016-08-01" "2016-07-01" "2016-06-01"  
[9] "2016-05-01" "2016-04-01" "2016-03-01" "2016-02-01"  
[13] "2016-01-01"
```

Sequences

Generating sequences of dates

R Console

```
> startdate <- as.Date("2016-1-1")
> enddate <- as.Date("2017-1-1")
> out <- seq(enddate, startdate, by = "-1 month")
> out
[1] "2017-01-01" "2016-12-01" "2016-11-01" "2016-10-01"
[5] "2016-09-01" "2016-08-01" "2016-07-01" "2016-06-01"
[9] "2016-05-01" "2016-04-01" "2016-03-01" "2016-02-01"
[13] "2016-01-01"
```

Sequences

Generating sequences of letters

letters is used to find sequence of lowercase alphabets

```
> letters
```

```
[1] "a" "b" "c" "d" "e" "f" "g" "h" "i" "j" "k" "l" "m" "n"  
[15] "o" "p" "q" "r" "s" "t" "u" "v" "w" "x" "y" "z"
```

R Console

```
> letters
```

```
[1] "a" "b" "c" "d" "e" "f" "g" "h" "i" "j" "k" "l" "m" "n"  
[15] "o" "p" "q" "r" "s" "t" "u" "v" "w" "x" "y" "z"
```

Sequences

Generating sequences of letters

`letters[from_index:to_index]` is used to find sequence of lowercase alphabets from a particular index to a specified index.

```
> letters[1:3]  
[1] "a" "b" "c"
```

```
> letters[3:1]  
[1] "c" "b" "a"
```

```
> letters[21:23]  
[1] "u" "v" "w"
```

```
> letters[2]  
[1] "b"
```

Sequences

R Console

```
> letters[1:3]
[1] "a" "b" "c"
> letters[3:1]
[1] "c" "b" "a"
> letters[21:23]
[1] "u" "v" "w"
> letters[2]
[1] "b"
```


Sequences

Generating sequences of alphabets

LETTERS is used to find sequence of uppercase alphabets

> LETTERS

```
[1] "A" "B" "C" "D" "E" "F" "G" "H" "I" "J" "K" "L" "M" "N"  
[15] "O" "P" "Q" "R" "S" "T" "U" "V" "W" "X" "Y" "Z"
```

R Console

> LETTERS

```
[1] "A" "B" "C" "D" "E" "F" "G" "H" "I" "J" "K" "L" "M" "N"  
[15] "O" "P" "Q" "R" "S" "T" "U" "V" "W" "X" "Y" "Z"
```

Sequences

Generating sequences of alphabets

`LETTERS[from_index:to_index]` is used to find sequence of uppercase alphabets from a particular index to a specified index.

```
> LETTERS[1:3]  
[1] "A" "B" "C"
```

```
> LETTERS[3:1]  
[1] "C" "B" "A"
```

```
> LETTERS[21:23]  
[1] "U" "V" "W"
```

```
> LETTERS[2]  
[1] "B"
```

Sequences

R Console

```
> LETTERS[1:3]
[1] "A" "B" "C"
> LETTERS[3:1]
[1] "C" "B" "A"
> LETTERS[21:23]
[1] "U" "V" "W"
> LETTERS[2]
[1] "B"
```