

Data structures

Vector

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Data frame

Vector

Vector in R

Elements are enclosed in c()

c()

Elements are separated with a comma ,







c( ,  ,  ,  ,  ,  , )

Example


```
vec <- c(1, 8, 9, 4.5, 16, 2)
```

Vector indexing

Select elements of vectors

```
vec <- c(, , , , , )  
vec[1]
```







Example

```
vec <- c(, 3.5, 6, 12, 8, 1.8)  
vec[1]
```

```
[1] 2
```

Vector indexing

Select elements of vectors

```
vec <- c(, , , , , )  
vec[3:5]
```







Example

```
vec <- c(2, 3.5, 6, 12, 8, 1.8)  
vec[3:5]
```



```
[1] 6 12 8
```

Vector indexing

Select elements of vectors

```
vec <- c(, , , , , )  
vec[c(1, 4)]
```

Example

```
vec <- c(, 3.5, 6, , 8, 1.8)  
vec[c(1, 4)]
```

```
[1] 2 12
```

Data structures

Vector

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Data frame

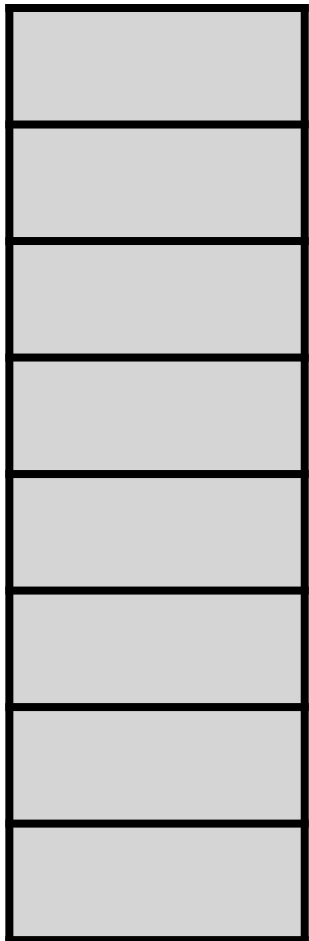
Data frame

Vector



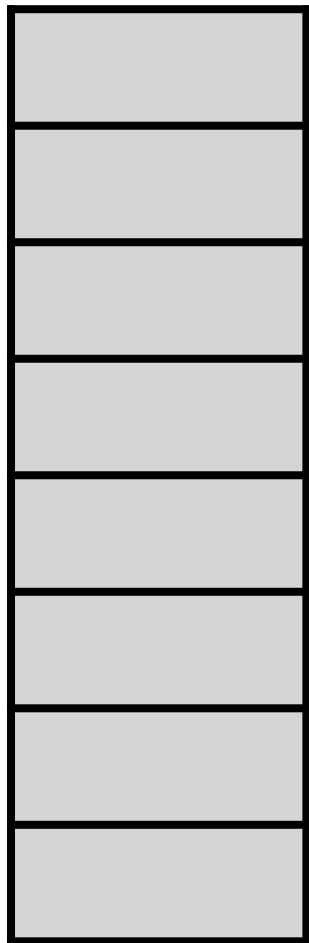
Data frame

Vector

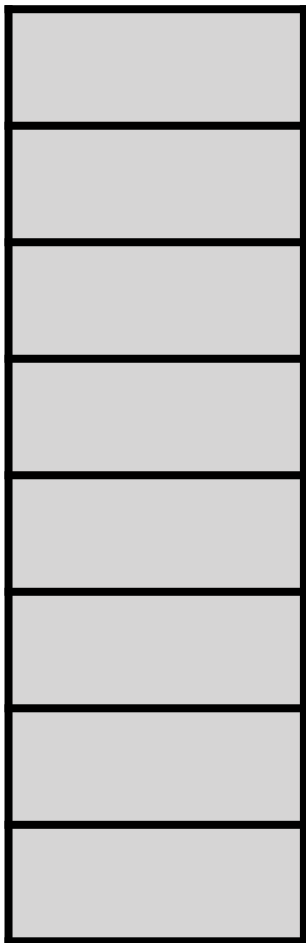


Data frame

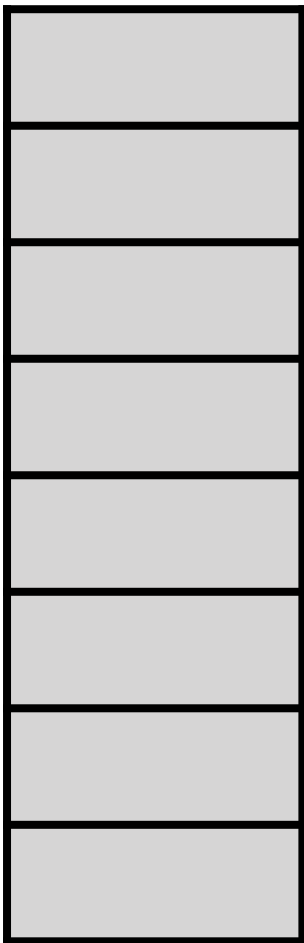
Vector



Vector



Vector



Vector



Vector



Data frame

Vector Vector Vector Vector Vector

Data frame

Data frame in R

	Col1	Col2	Col3	Col4	Col5	Col6	Col7	Col8
Row1								
Row2								
Row3								
Row4								

Each column in a data frame is a vector!

Data frame indexing

	Col1	Col2	Col3	Col4	Col5	Col6	Col7	Col8
Row1								
Row2								
Row3								
Row4								

`df[row, column]`

`df[1,]`

Data frame indexing

	Col1	Col2	Col3	Col4	Col5	Col6	Col7	Col8
Row1								
Row2								
Row3								
Row4								

`df[row, column]`

`df[, 4]`

Data frame indexing

```
# Load internal dataset
```

```
data (airquality)
```

```
df <- airquality
```

```
view(df)
```

```
# select first row
```

```
df[1, ]
```

```
# select third column
```

```
df[, 3]
```

```
df[row, column]
```



	Ozone	Solar.R	Wind	Temp	Month	Day
1	41	190	7.4	67	5	1
2	36	118	8.0	72	5	2
3	12	149	12.6	74	5	3
4	18	313	11.5	62	5	4
5	NA	NA	14.3	56	5	5
6	28	NA	14.9	66	5	6
7	23	299	8.6	65	5	7
8	19	99	13.8	59	5	8
9	8	19	20.1	61	5	9
10	NA	194	8.6	69	5	10
11	7	NA	6.9	74	5	11
12	16	256	9.7	69	5	12
13	11	290	9.2	66	5	13
14	14	274	10.9	68	5	14
15	18	65	13.2	58	5	15
16	14	334	11.5	64	5	16
17	34	307	12.0	66	5	17
18	6	78	18.4	57	5	18

Data frame indexing

```
# select custom range
```

```
data(airquality)
```

```
df <- airquality
```

```
df[c(3:5, 7), 3:4]
```

```
df[row, column]
```



	Ozone	Solar.R	Wind	Temp	Month	Day
1	41	190	7.4	67	5	1
2	36	118	8.0	72	5	2
3	12	149	12.6	74	5	3
4	18	313	11.5	62	5	4
5	NA	NA	14.3	56	5	5
6	28	NA	14.9	66	5	6
7	23	299	8.6	65	5	7
8	19	99	13.8	59	5	8
9	8	19	20.1	61	5	9
10	NA	194	8.6	69	5	10
11	7	NA	6.9	74	5	11
12	16	256	9.7	69	5	12
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15	18	65	13.2	58	5	15
16	14	334	11.5	64	5	16
17	34	307	12.0	66	5	17
18	6	78	18.4	57	5	18

Data frame indexing

	Col1	Col2	Col3	Col4	Col5	Col6	Col7	Col8
Row1	df[1, 1]	df[1, 2]	df[1, 3]	df[1, 4]	df[1, 5]	df[1, 6]	df[1, 7]	df[1, 8]
Row2	df[2, 1]	df[2, 2]	df[2, 3]	df[2, 4]	df[2, 5]	df[2, 6]	df[2, 7]	df[2, 8]
Row3	df[3, 1]	df[3, 2]	df[3, 3]	df[3, 4]	df[3, 5]	df[3, 6]	df[3, 7]	df[3, 8]
Row4	df[4, 1]	df[4, 2]	df[4, 3]	df[4, 4]	df[4, 5]	df[4, 6]	df[4, 7]	df[4, 8]