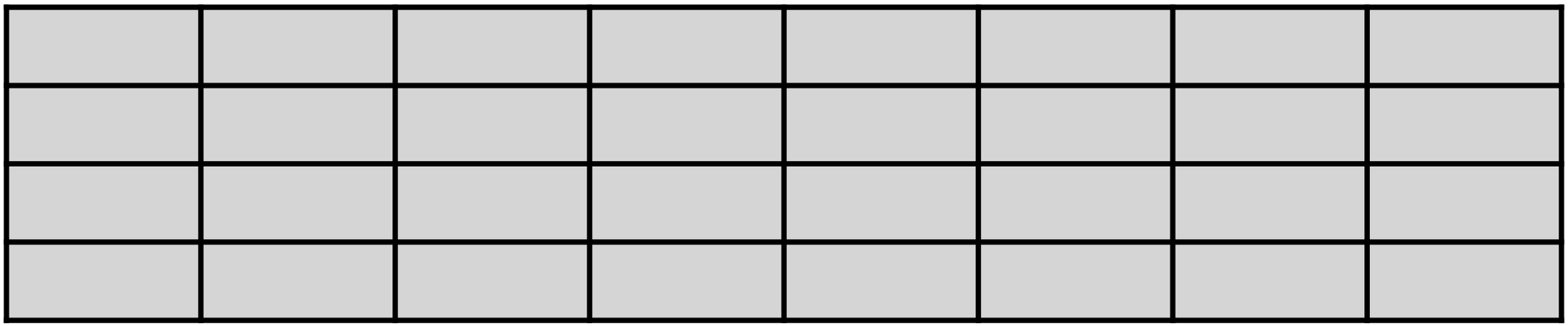
Data structures

Vector

Data frame



Vector

Vector in R

Elements are enclosed in c( )

Elements are separated with a comma ,

Example

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

Vector indexing

Select elements of vectors


```
vec[1]
```

Example

```
vec <- c(2, 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

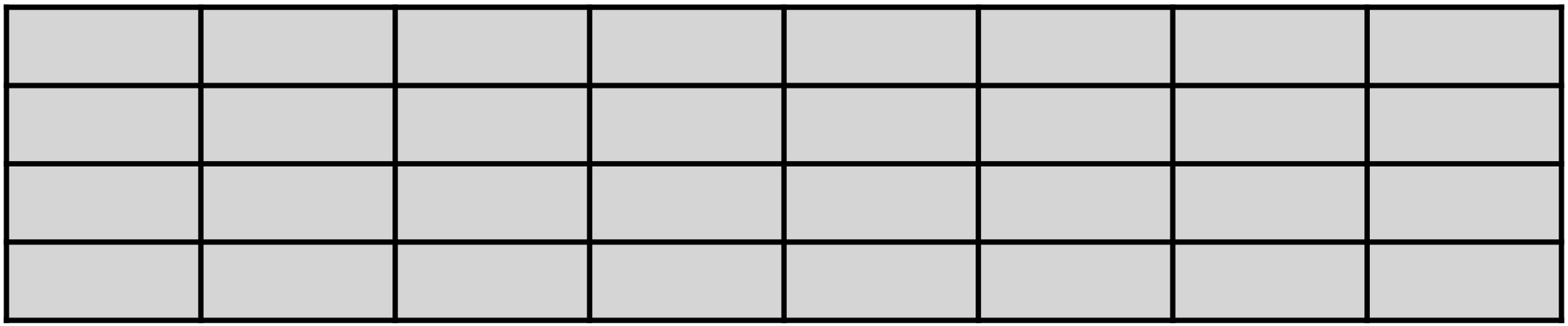
```
vec <- c(2, 3.5, 6, 12, 8, 1.8)
vec[c(1, 4)]
```

```
[1] 2  12
```

Data structures

Vector

Data frame

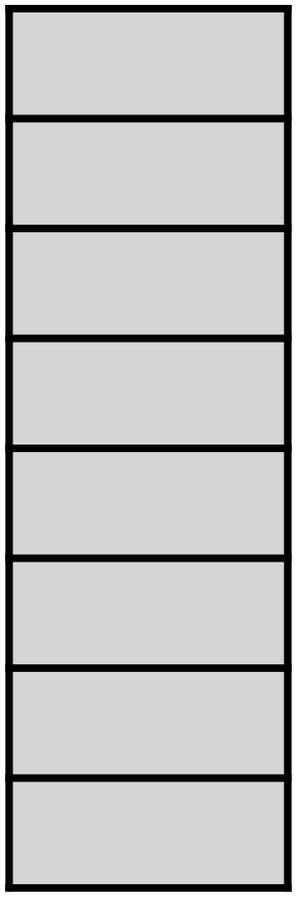


Data frame

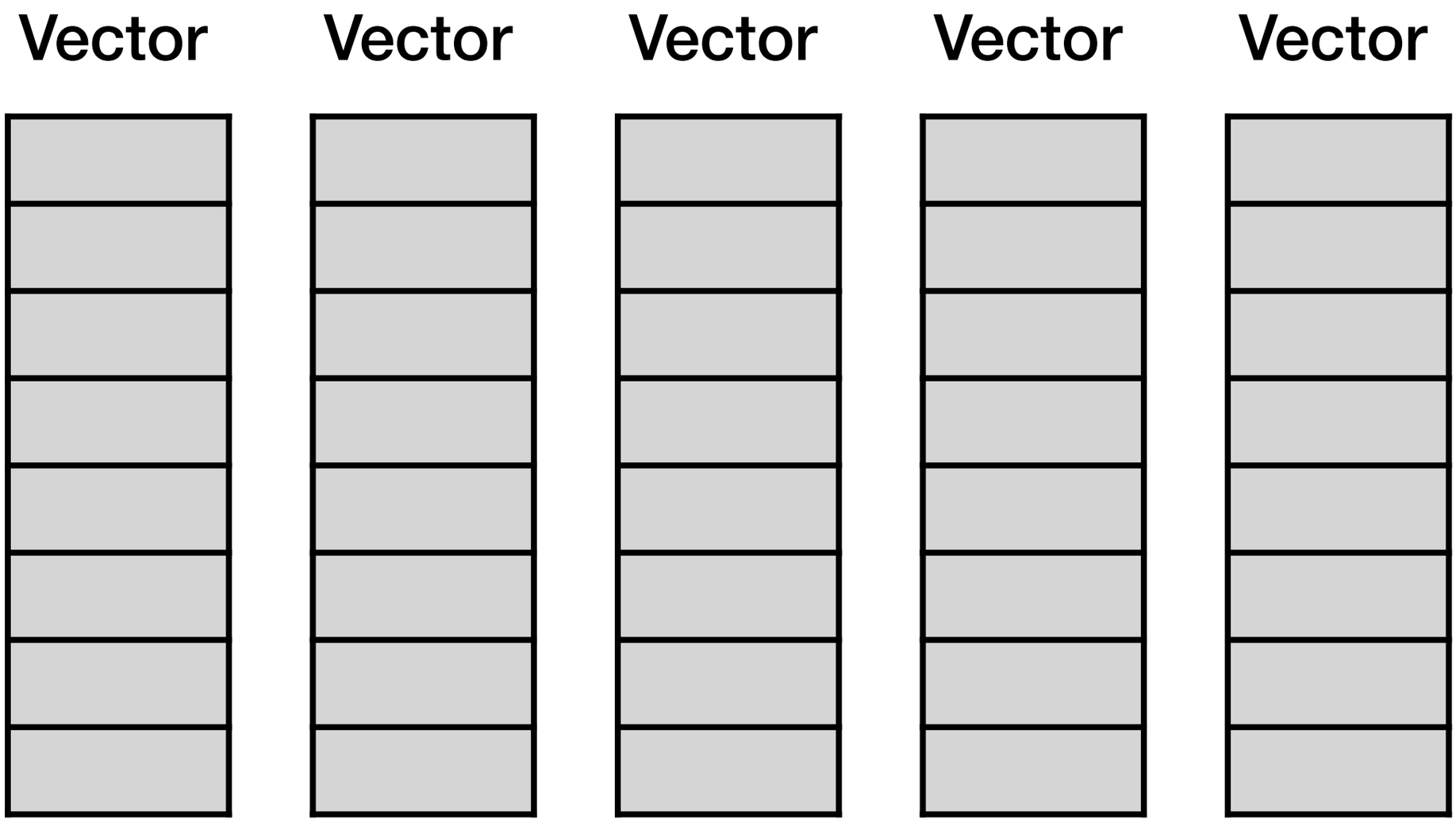
Vector

Data frame

Vector



Data frame

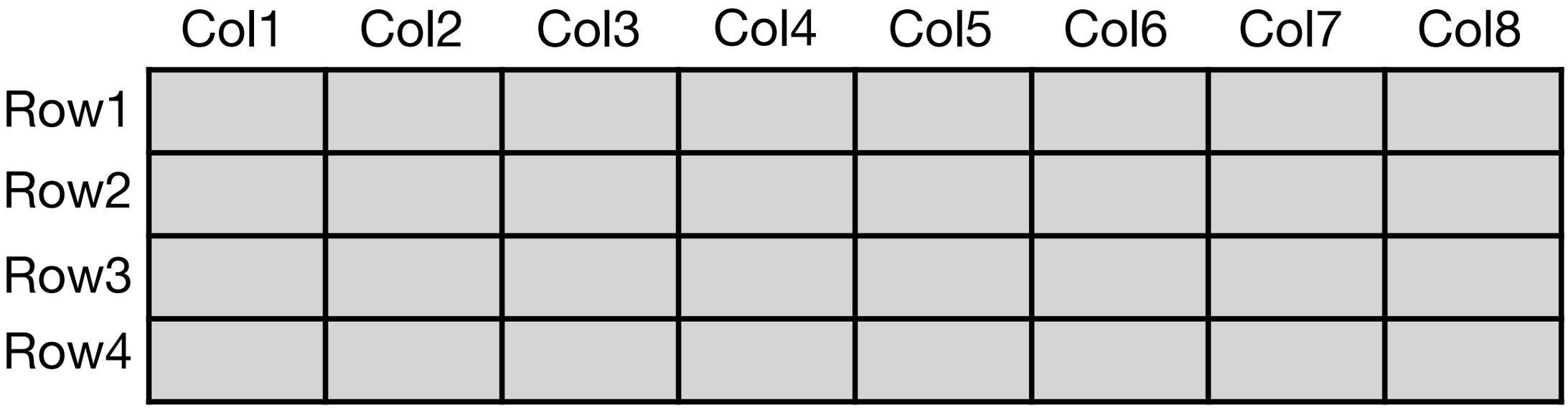


Data frame

Vector	Vector	Vector	Vector	Vector

Data frame

Data frame in R



Each column in a data frame is a vector!

Data frame indexing


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

```
df[1, ]
```

Data frame indexing


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

```
df[, 4]
```

Data frame indexing

```r
# 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]
```


-first

	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

	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]`