What is a vector?

INTRODUCTION TO R FOR FINANCE

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Vectors and stock prices

```
apple <- 159.4
apple_stock <- c(159.4, 160.3, 161.3)
apple_stock
```

```
159.4 160.3 161.3
```

```
is.vector(apple)
```

```
TRUE
```

```
grocery <- c("apple", "orange", "cereal")
grocery
```

```
"apple" "orange" "cereal"
```

Vector names()

```
apple_stock <- c(159.4, 160.3, 161.3)
names(apple_stock) <- c("Monday", "Tuesday", "Wednesday")
apple_stock
```

```
Monday   Tuesday Wednesday
 159.4     160.3     161.3
```

Let's practice!

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Vector manipulation

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Vectors and friends

```
dan <- 100
rob <- 50
total <- dan + rob
```

```
dan <- c(100, 200, 150)
rob <- c(50, 75, 100)
monthly_total <- dan + rob
monthly_total
```

```
150 275 250
```

```
sum(monthly_total)
```

```
675
```

More examples

```
a <- c(2.2, 12, 7)
b <- c(11.5, 8, 3.4)

# Subtraction!
c <- a - b
c
```

```
-9.3 4.0  3.6
```

```
# Multiplication!
d <- a * b
d
```

```
25.3 96.0 23.8
```

```
# Recycling!
e <- 2
f <- a * e
f
```

```
4.4 24.0 14.0
```

Let's practice!

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Matrix - a 2D vector

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Enter the matrix

```
my_matrix <- matrix(c(2, 3, 4, 5), nrow = 2, ncol = 2)
my_matrix
```

```
     [,1] [,2]
[1,]    2    4
[2,]    3    5
```

```
my_matrix2 <- matrix(c(2, 3, 4, 5), nrow = 2, ncol = 2,
                     byrow = TRUE)
my_matrix2
```

```
     [,1] [,2]
[1,]    2    3
[2,]    4    5
```

Matrix coercion

```
coerce_me <- matrix(c(2, 3, 4, "hi"), nrow = 2, ncol = 2)
coerce_me
```

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

cbind( ) and rbind( )

```
micr <- c(59.20, 59.25, 60.22, 59.95)
ebay <- c(17.44, 18.32, 19.11, 18.22)
```

```
cbind(micr, ebay)
```

```
      micr  ebay
[1,] 59.20 17.44
[2,] 59.25 18.32
[3,] 60.22 19.11
[4,] 59.95 18.22
```

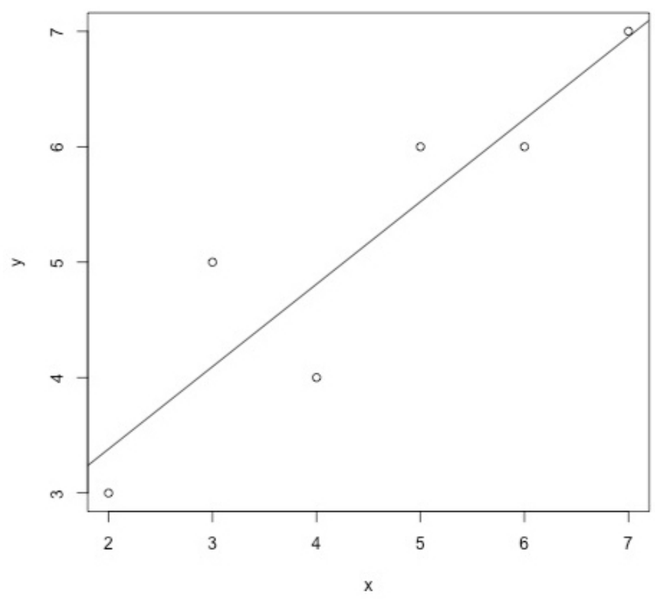
```
rbind(micr, ebay)
```

```
 [,1]  [,2]  [,3]  [,4]
59.20 59.25 60.22 59.95
17.44 18.32 19.11 18.22
```

cor()relation

- +1: perfect positive linear relationship
- -1: perfect negative linear relationship
- 0: no linear relationship

.908



cor()relation

```
micr <- c(59.20, 59.25, 60.22, 59.95)
ebay <- c(17.44, 18.32, 19.11, 18.22)

cor(micr, ebay)
```

```
0.7835704
```

```
micr_ebay_matrix <- cbind(micr, ebay)
cor(micr_ebay_matrix)
```

```
          micr      ebay
micr 1.0000000 0.7835704
ebay 0.7835704 1.0000000
```

Let's practice!

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