INTRODUCTION TO R FOR FINANCE

What is a vector?

Vectors and stock prices

```
> apple <- 159.4

> apple_stock <- c(159.4, 160.3, 161.3)

> apple_stock
[1] 159.4 160.3 161.3

> is.vector(apple)
[1] TRUE

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

> grocery
[1] "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
```

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Let’s practice!

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Vector manipulation

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
[1] 150 275 250

> sum(monthly_total)
[1] 675
```

More examples

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

> # Subtraction!
> c <- a - b
> c
[1] -9.3  4.0  3.6

> # Multiplication!
> d <- a * b
> d
[1] 25.3 96.0 23.8

> # Recycling!
> e <- 2
> f <- a * e
> f
[1]  4.4 24.0 14.0
```

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Let’s practice!

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Matrix - a 2D vector

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"
```

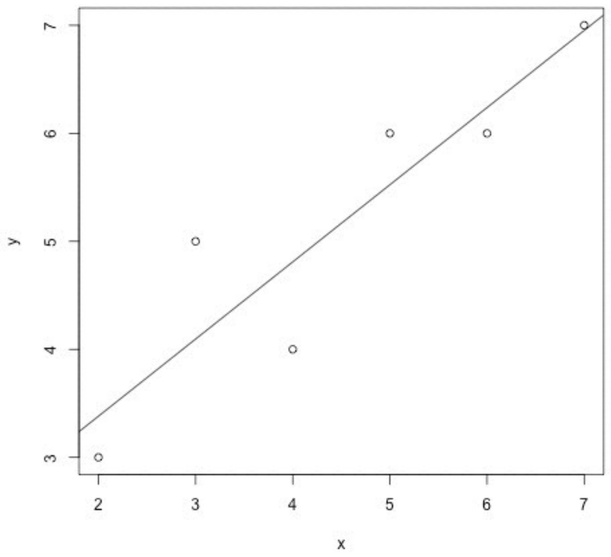
cbind( ) and rbind( )

```
> 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]
micr 59.20 59.25 60.22 59.95
ebay 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)
[1] 0.7835704

> micr_ebay_matrix <- cbind(micr, ebay)

> cor(micr_ebay_matrix)
          micr      ebay
micr 1.0000000 0.7835704
ebay 0.7835704 1.0000000
```

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Let’s practice!