Notebook1

Why R?

- R is world's most widely used statistics programming language.
- It is supported by a vibrant and talented community of contributors.
- R is a well-developed, simple and effective programming language.
- R has an effective data handling and storage facility.
- R provides a suite of operators for calculations on arrays, lists, vectors and matrices.
- R provides a large, coherent and integrated collection of tools for data analysis.

R Command Prompt

```
R
```

R Script

```
Rscript fileName.R
```

Set Working Directory

```
#getwd()
```

```
#setwd("path")

#getwd()
```

```
#getwd()
```

Packages Installation

An **R package** is a collection of functions, data, and documentation that extends the capabilities of base R.

```
#install.packages("ggplot2")
```

```
#install.packages("tidyverse")
```

```
#library(ggplot2)
```

Coding Basics

All R statements where you create objects, assignment statements, have the same form:

`object_name <- value`

```
x <- 5
```

Comments

- R does not support multi-line comments

```
# comment
```

R – objects

R has five basic or "atomic" classes of objects:

- character
- numeric (real numbers)
- integer
- complex
- logical (True/False)

R – Data Types

- Vectors
- Lists
- Matrices
- Arrays
- Factors
- Data Frames

Vectors

- The most basic type of R object is a vector.

The c() function can be used to create vectors.

```
x <- c("asas", "sds")
x
```

```
[1] "asas" "sds"
```

```
class(x)
```

```
[1] "character"
```

```
x <- c(TRUE, FALSE)
x
```

```
[1]  TRUE FALSE
```

```
class(x)
```

```
[1] "logical"
```

```
x <- 3:10
x
```

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

```
  class(x)
```

```
[1] "integer"
```

```
  x <- c(1,5)
  x
```

```
[1] 1 5
```

```
  class(x)
```

```
[1] "numeric"
```

- You can also use the vector() function to initialize vectors.

```
  x <- vector("numeric", length = 10)
  x
```

```
 [1] 0 0 0 0 0 0 0 0 0 0
```

- A vector can only contain objects of the same class.

```
  x <- c(7, 'd')
  x
```

```
[1] "7" "d"
```

```
  x <- c(TRUE, 2)
  x
```

```
[1] 1 2
```

```
  x <- c('a', T)
  x
```

```
[1] "a"    "TRUE"
```

- When different objects are mixed in a vector, coercion occurs so that every element in the vector is of the same class.

Explicit Coercion

```
x <- 5
class(x)
```

```
[1] "numeric"
```

```
as.logical(x)
```

```
[1] TRUE
```

```
as.character(x)
```

```
[1] "5"
```

```
x <- c('a', 'b')
as.numeric(x)
```

```
Warning: NAs introduced by coercion
```

```
[1] NA NA
```

Matrics

```
m <- matrix(1:6, nrow=2,ncol=3)
m
```

```
     [,1] [,2] [,3]
[1,]    1    3    5
[2,]    2    4    6
```