1. Basics of R

```
# Reference book: "Beginning R: The Statistical Programming Language"
# Author: Dr. Mark Gardener
```

Help command

```
# help(topic)
# ?topic
# help(mean)
# ?mean
```

List of attached packages and R objects

```
[1] ".GlobalEnv"        "package:stats"     "package:graphics"
[4] "package:grDevices" "package:utils"     "package:datasets"
[7] "package:methods"   "Autoloads"         "package:base"
```

List of installed packages

```
installed.packages()
```

Loading package and detaching package

```
library(ggplot2)
detach(package:ggplot2)
```

Loading datasets

```
library(MASS)
data()
```

View datasets

```
View(iris)
```

Use R like a Calulator

```
3+9*12-7
```

```
[1] 104
```

```
(12+18/2-8/4)*2.5
```

```
[1] 47.5
```

```
pi*2^3-sqrt(4)
```

```
[1] 23.13274
```

```
abs(12-18*2/3-9)
```

```
[1] 9
```

```
factorial(4)
```

```
[1] 24
```

```
log(2,10)
```

```
[1] 0.30103
```

```
log(2,base = 10)
```

```
[1] 0.30103
```

```
log10(2)
```

```
[1] 0.30103
```

```
log(2)
```

```
[1] 0.6931472
```

```
exp(0.6931472)
```

```
[1] 2
```

```
10^0.30103
```

```
[1] 2
```

```r
sin(45 * pi / 180)
```

```
[1] 0.7071068
```

storing the results of calculations

```r
ans1=23+14/2-18+(7*pi/2)
ans1
```

```
[1] 22.99557
```

```r
ans2= 13+11+(17-4/7)
ans2
```

```
[1] 40.42857
```

```r
ans1 + ans2 / 2
```

```
[1] 43.20986
```

```r
ans3=ans2+9-2+pi
ans3
```

```
[1] 50.57016
```

Combine command for making data

```r
data1 = c(3, 5, 7, 5, 3, 2, 6, 8, 5, 6, 9)
data1
```

```
 [1] 3 5 7 5 3 2 6 8 5 6 9
```

```r
data2= c(data1, 4, 5, 7, 3, 4)
data2
```

```
 [1] 3 5 7 5 3 2 6 8 5 6 9 4 5 7 3 4
```

Entering Text Items as Data

```r
day1=c("Mon","Tue","Wed","Thu")
day1
```

```
[1] "Mon" "Tue" "Wed" "Thu"
```

```
day2=c(day1, "Fri")
day2
```

```
[1] "Mon" "Tue" "Wed" "Thu" "Fri"
```

```
mix=c(day1,day2)
mix
```

```
[1] "Mon" "Tue" "Wed" "Thu" "Mon" "Tue" "Wed" "Thu" "Fri"
```

Using the scan() command for entering data

```
# data3 = scan()
# 6 7 8 7 6 3 8 9 10 7 6 9
# press enter two times and your data save in data3 object
# data3
```

Entering Text as Data

```
# day2 = scan(what = 'character')
# a b c d e
# press enter two times and your data save in data2 object
# day2
```

Default directory

```
getwd()
```

```
[1] "D:/Desktop/BDA Books/Practicals BDA/1. All Practicals BDA sem 1/Markdown file for BDA Sem1"
```

Reading comma separated file (csv) file

```
#read.csv() - command is a special case of the command with defaults
#set for CSV files
#Create small file in excel
#Save this file in excel with .csv extension.
#fw = read.csv(file.choose())
```

The ls() command lists all the objects currently in memory.

```
ls(pattern = "d") #letter 'd' anywhere in objects
```

```
## [1] "data1" "data2" "day1"  "day2"
```

```r
ls(pattern = "da") #letters 'da' anywhere in objects
```

```
## [1] "data1" "data2" "day1"  "day2"
```

```r
ls(pattern = "^d") #object begin with 'd' letter
```

```
## [1] "data1" "data2" "day1"  "day2"
```

```r
ls(pattern = "da") #object begin with 'da' letter
```

```
## [1] "data1" "data2" "day1"  "day2"
```

```r
ls(pattern = "^d | ^f") #object begin with 'd' or 'f' letter
```

```
## character(0)
```

```r
ls(pattern = "^[dw]") #object begin with 'd or w' letter
```

```
## [1] "data1" "data2" "day1"  "day2"
```

```r
ls(pattern = "1$") #object end with '1' letter
```

```
## [1] "ans1"  "data1" "day1"
```

```r
ls(pattern = "d.y") #the period as a wild card
```

```
## [1] "day1" "day2"
```

```r
ls(pattern = "d..1")
```

```
## [1] "day1"
```

str() - examining data structure

```r
str(data2)
```

```
 num [1:16] 3 5 7 5 3 2 6 8 5 6 ...
```

class() - information about the type of object

```r
class(data2)
```

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

Remove objects from R - rm(list)

```r
rm(list = ls(pattern = "^day")) # remove object start with 'day'
rm(list = ls()) # remove everything
```