

Util Functions

`data = read.csv(file.choose())` Opens file explorer to get data

`setwd("Path")` Sets the working directory

`getwd()` Gets the working directory

`str(variable_name)` Structure of the variable

`ls()` Lists the variables

`rm(variable_name)` Removes the variable

`help.start()` Opens help

`library("Package Name")` Makes it available for the use

`install.packages("Package Name")` Installs package

`detach("Package Name")` detaches the package

`history()` Shows the history

DataFrame

`d=data.frame(Roll No=1:3, gender=c("F","M","F"), Grade=c(8,4,7))` Input Dataframe - length should be equal

`view(d)` Opens Editor

DataFrame (cont)

`summary(d)` Provides the descriptive statistics

`head(d)/tail(d)` Displays the top or bottom rows

Strings

`toString(x)` To produce a single character string

`toupper(x)/tolower(x)` Changes from upper to lower case and vice versa

`strsplit(word, character, fixed=TRUE)` Splits the word based on the character given

`substring(word, startpoint, endpoint)` Retrieves or replaces the substring of the character

Arrays

`1D = array(1:24)` 1 dimensional array

`2D = array(1:24, dim = c(6,4))` 2 dimensional array

`3D = array(1:24, dim = c(4,3,2))` 3 dimensional array

`dim(2D)` nrow(2D)

`ncol(2D)` length(2D)

Vectors

`num = c(1,2,3,4,5,6)` numeric vector

`chr = c("aaa","bbb")` character vector

`log = c(TRUE,TRUE,FALSE)` logical vector

`mean(vector)` mean

`sd(vector)` standard deviation

`var(vector)` variance

`range(vector)` range

`which.min(vec)/which.max(vec)` Finding the minimum and maximum values in the vector

Matrix

`mat = matrix(1:12, nrow=4, ncol=3)` matrix

`cbind(mat1,mat2)` column bind

`rbind(mat1,mat2)` row bind

`det(matrix(c(1,0,0,1),2))` Determinant

`solve(A)` Inverse

`A%*%B` Matrix Multiplication

C

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Page 1 of 2.

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Lists

| | |
|--|------------------------|
| <code>x<-list(c(1,2,3),c("A","B","C"))</code> | Collection of Elements |
| <code>x[[1]]</code> | First row |

Descriptive Statistics

| | |
|-------------------------------|-------------|
| <code>colMeans(data[])</code> | column mean |
| <code>colSums(data[])</code> | column sum |
| <code>rowMeans(data[])</code> | row mean |
| <code>rowSums(data[])</code> | row sum |

Hypothesis

| | |
|---|----------------------|
| <code>t.test(data)</code> | 1 sample t test |
| <code>t.test(data1,data2)</code> | 2 sample t test |
| <code>t.test(pre,post,paired=TRUE)</code> | paired sample t test |
| <code>cor.test(data1,data2)</code> | Correlation |
| <code>chisq.test(data)</code> | Chi square |
| <code>aov()</code> | ANOVA |
| <code>wilcox.test(data)</code> | Wilcox test |
| <code>shapiro.test(data)</code> | Shapiro test |
| <code>prop.test</code> | Testing proportions |

Visualization

| | |
|--|---|
| <code>qplot(data, line=TRUE,...)</code> | produces quantile-quantile plot |
| <code>qqnorm(column)</code> | produces quantile-quantile plot |
| <code>barplot(table)</code> | Relationship between a numerical and a categorical variable |
| <code>boxplot(x,data=)</code> | Distribution |
| <code>ggplot(data = NULL, mapping = aes(), ...)</code> | initializes a ggplot object |
| <code>geom_bar()</code> | bar graph |
| <code>coord_flip()</code> | flip x and y coordinates |
| <code>facet_grid()</code> | lay out panels in a grid |
| <code>geom_density</code> | density plot |
| <code>geom_hist</code> | histogram |
| <code>geom_point</code> | scatter plots |
| <code>hist(column)</code> | normality test |
| <code>pie(table(tablename))</code> | piecharts |

Loops

| | |
|---|------------------|
| <code>for (variable in sequence){ Do something }</code> | for loop |
| <code>while (condition){ Do something }</code> | while loop |
| <code>if (condition){ Do something } else { Do something different }</code> | ifelse statement |

Probability

| | |
|---|--------------------|
| <code>runif(n, min = 0, max = 1)</code> | Uniform |
| <code>rnorm(n,mean,sd)</code> | Normal or Gaussian |
| <code>rexp(n)</code> | Exponential |
| <code>rbinom(n, size, prob)</code> | Binomial |
| <code>rpois(n,size)</code> | Poisson |

Data Table

| |
|----------------------------------|
| <code>library(data.table)</code> |
| <code>class(x)</code> |
| <code>head(x)</code> |

Statistics

| | |
|--|-------------------------|
| <code>fit <- lm(y ~ x1 + x2 + x3, data=mydata)</code> | Regression summary(fit) |
| <code>glm.fit(y ~ x1 + x2 + x3, family="", data=mydata)</code> | Classification |
| <code>kmeans(data)</code> | Clustering |



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Page 2 of 2.

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