L01-Basic R class notes

Basic Terminology

- Difference between R and RStudio
- Show the components of RStudio - editor, console, environment, final pane has help, output viewer, packages
- > is called prompt. It means that R is ready to take your command(s).
- Commands are "executed".
- Tell about R sessions.
- Marin stat lectures youtube channel.

Basic R computions

```
## do these in console and in R script

## mention about writing "neat code"
5 + 6
```

```
## [1] 11
```

```
# show how environment stores a variable called total
## explain R is case sensitive
total <- 11

## similarly we have sin(), cos(), log(), pi
log(12); sin(1); pi; exp(0)
```

```
## [1] 2.484907
```

```
## [1] 0.841471
```

```
## [1] 3.141593
```

```
## [1] 1
```

```
## -Inf and +Inf exist as well
1/0
```

```
## [1] Inf
```

```r
# data in base-R
data("iris")
View(iris)
head(iris)
```

```
##   Sepal.Length Sepal.Width Petal.Length Petal.Width Species
## 1          5.1         3.5          1.4         0.2  setosa
## 2          4.9         3.0          1.4         0.2  setosa
## 3          4.7         3.2          1.3         0.2  setosa
## 4          4.6         3.1          1.5         0.2  setosa
## 5          5.0         3.6          1.4         0.2  setosa
## 6          5.4         3.9          1.7         0.4  setosa
```

```r
str(iris) # structure of iris data
```

```
## 'data.frame':    150 obs. of  5 variables:
##  $ Sepal.Length: num  5.1 4.9 4.7 4.6 5 5.4 4.6 5 4.4 4.9 ...
##  $ Sepal.Width : num  3.5 3 3.2 3.1 3.6 3.9 3.4 3.4 2.9 3.1 ...
##  $ Petal.Length: num  1.4 1.4 1.3 1.5 1.4 1.7 1.4 1.5 1.4 1.5 ...
##  $ Petal.Width : num  0.2 0.2 0.2 0.2 0.2 0.4 0.3 0.2 0.2 0.1 ...
##  $ Species     : Factor w/ 3 levels "setosa","versicolor",..: 1 1 1 1 1 1 1 1 1 ...
```

```r
dim(iris)
```

```
## [1] 150   5
```

```r
mean(iris$Sepal.Length)
```

```
## [1] 5.843333
```

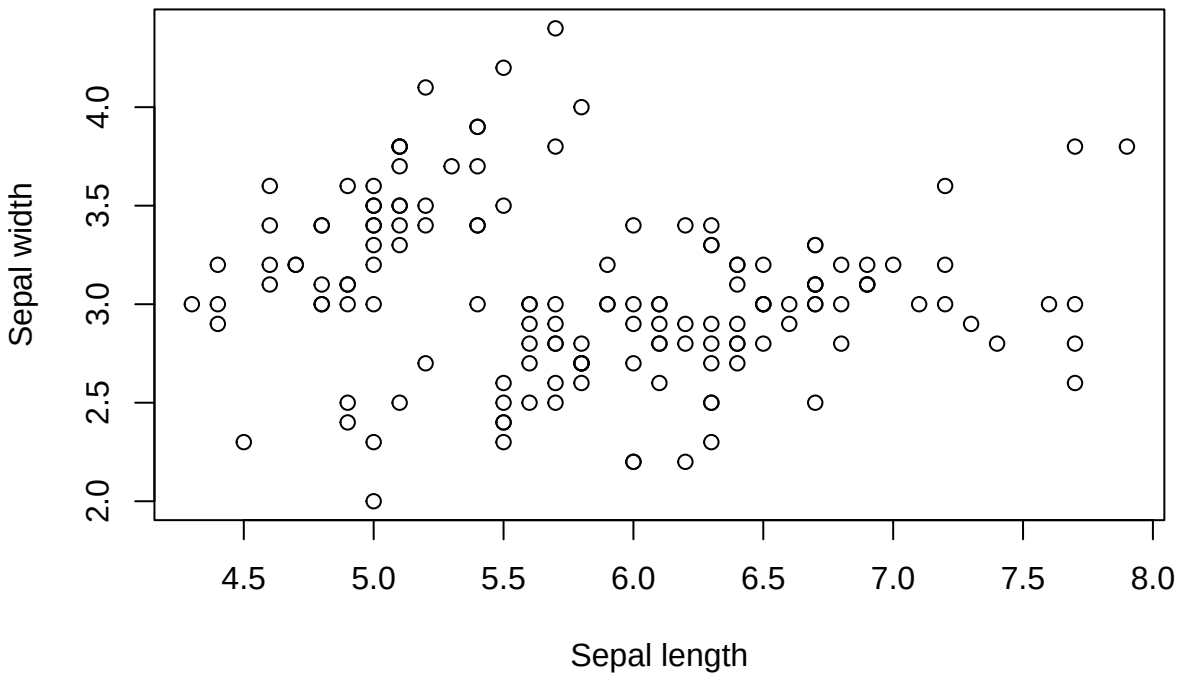
```r
sd(iris$Sepal.Width)
```

```
## [1] 0.4358663
```

```r
help("plot")
```

```
## starting httpd help server ... done
```

```r
plot(iris$Sepal.Length, iris$Sepal.Width, xlab = "Sepal length", ylab = "Sepal width")
```



Packages and libraries

- install directly on Rstudio
- using `install.packages()`
- CRAN, bioconductor
- `library()` and talk about "loading" packages.

Vectors and Matrices

- creating vectors using `c()`
- `seq()`, `t()`, `length()`, `rep()`
- R performs element wise computation
- try computing distance between vectors x and y
- `matrix()`
- For a matrix A, `A*A` vs `A%*%A`
- `diag()`