

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 computations

```
## 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
```

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

	Sepal.Length <dbl>	Sepal.Width <dbl>	Petal.Length <dbl>	Petal.Width <dbl>	Species <fct>
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
6 rows					

```
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 1 ...
```

```
dim(iris)
```

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

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

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

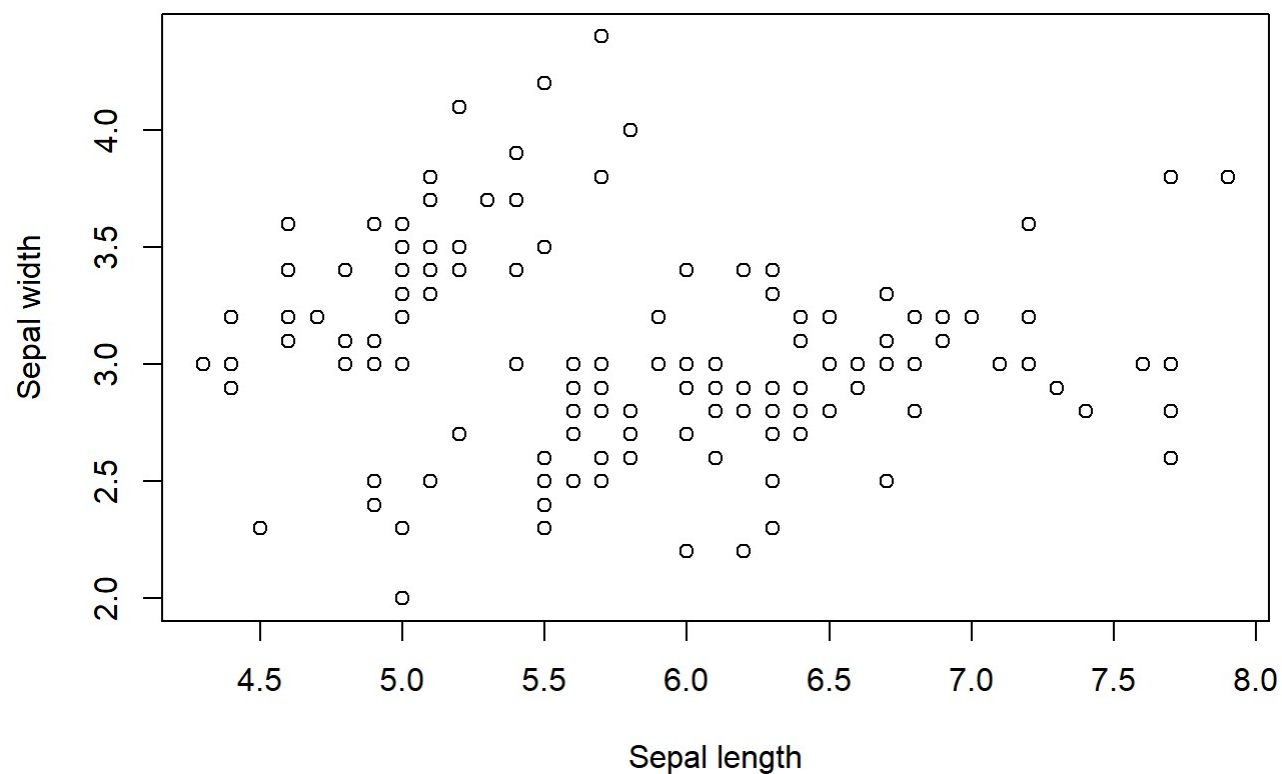
```
sd(iris$Sepal.Width)
```

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

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

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

```
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()`