Lab_2_Worksheet

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Question 1:

```
Fdata = read.csv("FlowerData.csv")
Fdata
```

```
##    Individual Age..days. Height..cm. Colour
## 1           a         31         5.0 purple
## 2           b         48        16.0 yellow
## 3           c         39        12.5    red
## 4           d         29         6.0    red
## 5           e         32         4.0    red
## 6           f         37         7.0 yellow
## 7           g         37         8.0 yellow
## 8           h         26         5.5 yellow
## 9           i         41        10.0 purple
## 10          j         34         8.5 purple
## 11          k         38        12.0     pr
## 12          l         40        18.0 yellow
## 13                    45        16.0 yellow
## 14          n         40        12.5 yellow
## 15          o         43         9.5    red
## 16          p         33         7.0 yellow
## 17          q         35         6.0 yellow
## 18          r         39         6.5 yellow
## 19          s         37        12.5    red
## 20          t         32        13.0 purple
## 21          u         31        10.5 yellow
## 22          v         36        11.0    red
## 23          w         41        17.0    red
## 24          x         39        15.5 yellow
## 25          y         31         9.5 yellow
## 26          z         33        10.0 yellow
## 27         aa         33        11.0 yellow
## 28         bb         28         5.5    red
## 29         cc         35        13.5    red
## 30         dd         37        16.0 yellow
## 31         ee         42        14.0    red
## 32         ff         45        17.0    red
## 33         gg         37        16.5    red
## 34         hh         46        18.0    red
## 35         ii         37        17.5 yellow
## 36         jj         44        19.0 yellow
```

```
## 37          kk          44         14.0 yellow
## 38          ll          37          8.0 yellow
## 39          mm          29         10.0 yellow
## 40          nn          37          9.0    red
## 41          oo          36         12.0 purple
## 42          pp          47         15.5 purple
## 43          qq          38         16.0 yellow
## 44          rr          40         16.0    red
## 45          ss          45         17.0 purple
```

(1.b)

Fdata is a data frame because it stores data tables that contains multiple data types. A matrix can only store one data type and Fdata stores numbers as well as characters therefore it must be a dataframe.

(1.c)

```
FlowerMatrix = as.matrix(Fdata[ ,2:3])
```

(1.d)

```
colnames(FlowerMatrix) <- c("Age (in days)", "Height (in cm)")
```

(1.e)

```
rownames(FlowerMatrix) = c(Fdata$Individual)
```

Question 2:

(2.a)

```
mean(Fdata$Age)

## [1] 37.42222
```

The average age is ~37.42 days

(2.b)

```
mean(Fdata$Height..cm.)

## [1] 11.87778
```

The average height is ~11.88 centimeters

(2.c)

```
max(Fdata$Height..cm.)

## [1] 19

max(Fdata$Age..days.)

## [1] 48
```

The tallest flower is 19 centimeters tall and the oldest flower is 48 days old

(2.d)

```
min(Fdata$Height..cm.)

## [1] 4

min(Fdata$Age..days.)

## [1] 26
```

The shortest flower is 4 centimeters tall and the youngest flower is 26 years old.

(2.e)

The tallest flower from part c is yellow. The oldest flower from part c is also yellow. The shortest flower from part d is red. The youngest flower from part d is also yellow.

Question 3:

(3.a)

```
n = nrow(FlowerMatrix)
```

There are 45 rows in the matrix

(3.b)

```
Samp = sample(1:nrow(FlowerMatrix), 15)
```

(3.c)

```
SampleMatrix = matrix(c(FlowerMatrix[Samp, ]), nrow=15)
colnames(SampleMatrix) <- c("Age (in days)", "Height (in cm)")
```

(3.d)

```
colMeans(SampleMatrix)

##  Age (in days) Height (in cm)
##       36.06667       10.70000
```

The sample average age of the flowers is ~37.07 days and the sample average height is ~11.03 cm. These results are very similar to the results found in questions 2 a/b but they are both just a bit under the actual value. That being said depending on the sample these values could fluctuate dramatically