R Notebook

QUESTION 1 Take a look at the 'iris' dataset that comes with R. The data can be loaded with the code:

```
library(datasets)
data(iris)
```

There will be an object called 'iris' in your workspace. In this dataset, what is the mean of 'Sepal.Length' for the species virginica? Please round your answer to the nearest whole number.

Solution

7

For the solution we can use any of the following codes

```
mean(iris$Sepal.Length[iris$Species=="virginica"])
```

```
## [1] 6.588
```

or

```
tapply(iris$Sepal.Length,iris$Species,mean)
```

```
##     setosa versicolor  virginica
##      5.006      5.936      6.588
```

or

```
with(iris,tapply(Sepal.Length,Species,mean))
```

```
##     setosa versicolor  virginica
##      5.006      5.936      6.588
```

or

```
sapply(split(iris$Sepal.Length, iris$Species), mean)
```

```
##     setosa versicolor  virginica
##      5.006      5.936      6.588
```

QUESTION 2 Continuing with the 'iris' dataset from the previous Question, what R code returns a vector of the means of the variables 'Sepal.Length', 'Sepal.Width', 'Petal.Length', and 'Petal.Width'?

Solution

```
apply(iris[, 1:4], 2, mean)
```

```
## Sepal.Length  Sepal.Width Petal.Length  Petal.Width
##     5.843333     3.057333     3.758000     1.199333
```

QUESTION 3 Load the 'mtcars' dataset in R with the following code

```
library(datasets)
data(mtcars)
```

How can one calculate the average miles per gallon (mpg) by number of cylinders in the car (cyl)? Select all that apply.

Solution

```
with(mtcars, tapply(mpg, cyl, mean))
```

```
##        4        6        8
## 26.66364 19.74286 15.10000
```

```
tapply(mtcars$mpg, mtcars$cyl, mean)
```

```
##        4        6        8
## 26.66364 19.74286 15.10000
```

```
sapply(split(mtcars$mpg, mtcars$cyl), mean)
```

```
##        4        6        8
## 26.66364 19.74286 15.10000
```

QUESTION 4 Continuing with the 'mtcars' dataset from the previous Question, what is the absolute difference between the average horsepower of 4-cylinder cars and the average horsepower of 8-cylinder cars?

Solution

127

for solution we can use any equations used in equation 1 or 3.

eg.

```
mean(mtcars$hp[mtcars$cyl=="8"]) - mean(mtcars$hp[mtcars$cyl=="4"])
```

```
## [1] 126.5779
```

QUESTION 5 If you run

```
debug(ls)
```

what happens when you next call the 'ls' function?

Solution

Execution of 'ls' will suspend at the beginning of the function and you will be in the browser.