SYMBIOSIS INSTITUTE OF TECHNOLOGY (SIT)
Constituent of Symbiosis International (Deemed University), Pune
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॥वसुधैव कुटुम्बकम्॥

Assignment No. 02	
Name of Student	**Antriksh Sharma**
PRN No.	**20070122021**
Title of Lab Assignment	**Use R for descriptive statistics:** **a) Write an R script to find basic descriptive statistics using summary, str, quartile function on mtcars & cars datasets.** **b) Write an R script to find subset of dataset by using subset (), aggregate () functions on iris dataset.**

Code & Output:

A. Write an R script to find basic descriptive statistics using summary, str, quartile function on mtcars & cars datasets

dsl_02.R

Source on Save | Run | Source

```
# 20070122021 - ANTRIKSH SHARMA
# DSL 02
# 2.1 Basic Descriptive Statistics

# Load necessary datasets
data(mtcars)
data(cars)

# Descriptive statistics for mtcars dataset
cat("Summary for mtcars dataset:\n")
print(summary(mtcars))

cat("\n\nStructure of mtcars dataset:\n")
print(str(mtcars))

cat("\n\nQuantiles of mtcars dataset:\n")
print(apply(mtcars, 2, quantile))

cat("\n\nSummary for cars dataset:\n")
print(summary(cars))

cat("\n\nStructure of cars dataset:\n")
print(str(cars))

cat("\n\nQuantiles of cars dataset:\n")
print(apply(cars, 2, quantile))
```

27:1 (Top Level) R Script

```
Source
Console  Terminal  Background Jobs
R 4.1.2 · ~/
> data(mtcars)
> data(cars)
>
> # Descriptive statistics for mtcars dataset
> cat("Summary for mtcars dataset:\n")
Summary for mtcars dataset:
> print(summary(mtcars))
      mpg              cyl             disp             hp             drat             wt             qsec
 Min.   :10.40   Min.   :4.000   Min.   : 71.1   Min.   : 52.0   Min.   :2.760   Min.   :1.513   Min.   :14.50
 1st Qu.:15.43   1st Qu.:4.000   1st Qu.:120.8   1st Qu.: 96.5   1st Qu.:3.080   1st Qu.:2.581   1st Qu.:16.89
 Median :19.20   Median :6.000   Median :196.3   Median :123.0   Median :3.695   Median :3.325   Median :17.71
 Mean   :20.09   Mean   :6.188   Mean   :230.7   Mean   :146.7   Mean   :3.597   Mean   :3.217   Mean   :17.85
 3rd Qu.:22.80   3rd Qu.:8.000   3rd Qu.:326.0   3rd Qu.:180.0   3rd Qu.:3.920   3rd Qu.:3.610   3rd Qu.:18.90
 Max.   :33.90   Max.   :8.000   Max.   :472.0   Max.   :335.0   Max.   :4.930   Max.   :5.424   Max.   :22.90
       vs               am              gear            carb
 Min.   :0.0000   Min.   :0.0000   Min.   :3.000   Min.   :1.000
 1st Qu.:0.0000   1st Qu.:0.0000   1st Qu.:3.000   1st Qu.:2.000
 Median :0.0000   Median :0.0000   Median :4.000   Median :2.000
 Mean   :0.4375   Mean   :0.4062   Mean   :3.688   Mean   :2.812
 3rd Qu.:1.0000   3rd Qu.:1.0000   3rd Qu.:4.000   3rd Qu.:4.000
 Max.   :1.0000   Max.   :1.0000   Max.   :5.000   Max.   :8.000
>
> cat("\n\nStructure of mtcars dataset:\n")


Structure of mtcars dataset:
> print(str(mtcars))
'data.frame':   32 obs. of  11 variables:
 $ mpg : num  21 21 22.8 21.4 18.7 18.1 14.3 24.4 22.8 19.2 ...
 $ cyl : num  6 6 4 6 8 6 8 4 4 6 ...
 $ disp: num  160 160 108 258 360 ...
 $ hp  : num  110 110 93 110 175 105 245 62 95 123 ...
 $ drat: num  3.9 3.9 3.85 3.08 3.15 2.76 3.21 3.69 3.92 3.92 ...
 $ wt  : num  2.62 2.88 2.32 3.21 3.44 ...
 $ qsec: num  16.5 17 18.6 19.4 17 ...
 $ vs  : num  0 0 1 1 0 1 0 1 1 1 ...
 $ am  : num  1 1 1 0 0 0 0 0 0 0 ...
 $ gear: num  4 4 4 3 3 3 3 4 4 4 ...
 $ carb: num  4 4 1 1 2 1 4 2 2 4 ...
NULL
>
> cat("\n\nQuantiles of mtcars dataset:\n")


Quantiles of mtcars dataset:
> print(apply(mtcars, 2, quantile))
        mpg cyl    disp    hp  drat      wt    qsec vs am gear carb
0%   10.400   4  71.100  52.0 2.760 1.51300 14.5000  0  0    3    1
25%  15.425   4 120.825  96.5 3.080 2.58125 16.8925  0  0    3    2
50%  19.200   6 196.300 123.0 3.695 3.32500 17.7100  0  0    4    2
75%  22.800   8 326.000 180.0 3.920 3.61000 18.9000  1  1    4    4
100% 33.900   8 472.000 335.0 4.930 5.42400 22.9000  1  1    5    8
```

B. Subset of Dataset

```
dsl_02.R
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27
28  # 2.2 Subset Of Dataset
29
30  data(iris)
31  # Using subset() function to filter rows
32  versicolor_subset <- subset(iris, Species == "versicolor")
33  species_mean_sepal_length <- aggregate(Sepal.Length ~ Species, data = iris, FUN = mean)
34
35  cat("Subset of iris dataset where Species is 'versicolor':\n")
36  print(versicolor_subset)
37
38  cat("\n\nMean Sepal.Length for each Species in iris dataset:\n")
39  print(species_mean_sepal_length)
40
36:25  (Top Level)  R Script
```

```
> # 2.2 Subset Of Dataset
>
> data(iris)
> # Using subset() function to filter rows
> versicolor_subset <- subset(iris, Species == "versicolor")
> species_mean_sepal_length <- aggregate(Sepal.Length ~ Species, data = iris, FUN = mean)
>
> cat("Subset of iris dataset where Species is 'versicolor':\n")
Subset of iris dataset where Species is 'versicolor':
> print(versicolor_subset)
    Sepal.Length Sepal.Width Petal.Length Petal.Width    Species
51           7.0         3.2          4.7         1.4 versicolor
52           6.4         3.2          4.5         1.5 versicolor
53           6.9         3.1          4.9         1.5 versicolor
54           5.5         2.3          4.0         1.3 versicolor
55           6.5         2.8          4.6         1.5 versicolor
56           5.7         2.8          4.5         1.3 versicolor
57           6.3         3.3          4.7         1.6 versicolor
58           4.9         2.4          3.3         1.0 versicolor
59           6.6         2.9          4.6         1.3 versicolor
60           5.2         2.7          3.9         1.4 versicolor
61           5.0         2.0          3.5         1.0 versicolor
62           5.9         3.0          4.2         1.5 versicolor
63           6.0         2.2          4.0         1.0 versicolor
64           6.1         2.9          4.7         1.4 versicolor
65           5.6         2.9          3.6         1.3 versicolor
66           6.7         3.1          4.4         1.4 versicolor
67           5.6         3.0          4.5         1.5 versicolor
68           5.8         2.7          4.1         1.0 versicolor
69           6.2         2.2          4.5         1.5 versicolor
70           5.6         2.5          3.9         1.1 versicolor
71           5.9         3.2          4.8         1.8 versicolor
72           6.1         2.8          4.0         1.3 versicolor
73           6.3         2.5          4.9         1.5 versicolor
74           6.1         2.8          4.7         1.2 versicolor
75           6.4         2.9          4.3         1.3 versicolor
76           6.6         3.0          4.4         1.4 versicolor
77           6.8         2.8          4.8         1.4 versicolor
78           6.7         3.0          5.0         1.7 versicolor
79           6.0         2.9          4.5         1.5 versicolor
80           5.7         2.6          3.5         1.0 versicolor
81           5.5         2.4          3.8         1.1 versicolor
82           5.5         2.4          3.7         1.0 versicolor
83           5.8         2.7          3.9         1.2 versicolor
84           6.0         2.7          5.1         1.6 versicolor
85           5.4         3.0          4.5         1.5 versicolor
86           6.0         3.4          4.5         1.6 versicolor
87           6.7         3.1          4.7         1.5 versicolor
88           6.3         2.3          4.4         1.3 versicolor
89           5.6         3.0          4.1         1.3 versicolor
90           5.5         2.5          4.0         1.3 versicolor
91           5.5         2.6          4.4         1.2 versicolor
92           6.1         3.0          4.6         1.4 versicolor
93           5.8         2.6          4.0         1.2 versicolor
94           5.0         2.3          3.3         1.0 versicolor
95           5.6         2.7          4.2         1.3 versicolor
96           5.7         3.0          4.2         1.2 versicolor
97           5.7         2.9          4.2         1.3 versicolor
98           6.2         2.9          4.3         1.3 versicolor
99           5.1         2.5          3.0         1.1 versicolor
100          5.7         2.8          4.1         1.3 versicolor
>
> cat("\n\nMean Sepal.Length for each Species in iris dataset:\n")


Mean Sepal.Length for each Species in iris dataset:
> print(species_mean_sepal_length)
     Species Sepal.Length
1     setosa        5.006
2 versicolor        5.936
3  virginica        6.588
>
```

Conclusion: *We've learnt how to* use R for descriptive statistics

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