# Experiment 10:
# Illustrate the descriptive statistics using summary() in R

- Aim: To generate the statistical measurements for a given dataset using summary() method in R.

# Exp. 10: Descriptive statistics using summary() in R

**What is meant by Descriptive Statistics?**

- A descriptive statistic is a summary statistic that quantitatively describes or summarizes features from a collection of information.
- They help describe, show or summarize data in a meaningful way such that, for example, patterns might emerge from the data.

# Exp. 10: Descriptive statistics using summary() in R

- Descriptive statistics do not, however, allow us to make conclusions beyond the data we have analyzed or reach conclusions regarding any hypotheses we might have made.
- They are simply a way to describe our data.

# Exp. 10: Descriptive statistics using summary() in R

- Descriptive statistics are very important because if we simply presented our raw data it would be hard to visualize what the data was showing, especially if there was a lot of it.
- Descriptive statistics therefore enables us to present the data in a more meaningful way, which allows simpler interpretation of the data.

# Exp. 10: Descriptive statistics using summary() in R

- Typically, there are two general types of statistics that are used to describe data:
  - **Measures of central tendency**: these are ways of describing the central position of a frequency distribution for a group of data.
  - The most common measures of central tendency are the **arithmetic mean, the median, and the mode.**

# Exp. 10: Descriptive statistics using summary() in R

- **Measures of spread**: These are ways of summarizing a group of data by describing how spread out the scores are.
- Measures of spread include the **range, quantiles and the interquartile range, variance and standard deviation.**

# Exp. 10: Descriptive statistics using summary() in R

- Inbuilt datasets in R can be accessed by using:
  >data()

```
> data(mtcars)          #Load the dataset into current workspace
> print(mtcars)         #Display the contents of dataset
> head(mtcars)          # First 6 records can be displayed(default)

> head(mtcars,10)       # First 10 records can be displayed
> tail(mtcars)          # Last 6 records can be displayed
```

# Exp. 10: Descriptive statistics using summary() in R

- The descriptive statistic measures can be obtained by using the functions like mean(), median(), range(), sd(), quantile(), etc..
  - Ex:
    - mean(iris$Sepal.Length)
    - mean(iris$Sepal.Width)
    - quantile(iris$Petal.Width)

## Exp. 10: Descriptive statistics using summary() in R

- R comes with an inbuilt function **summary(),** that calculates basic summary statistics for all numerical features in a data.frame.
- Eg.
  - summary(iris)

# Exp. 10: Descriptive statistics using summary() in R

- Generating and observing the summary statistics of all features with respect to different classes will convey more information.
  - Eg.
    - summary(iris[1:50,]) #Setosa
    - summary(iris[51:100,]) #Versicolor
    - summary(iris[101:150,]) #Virginica