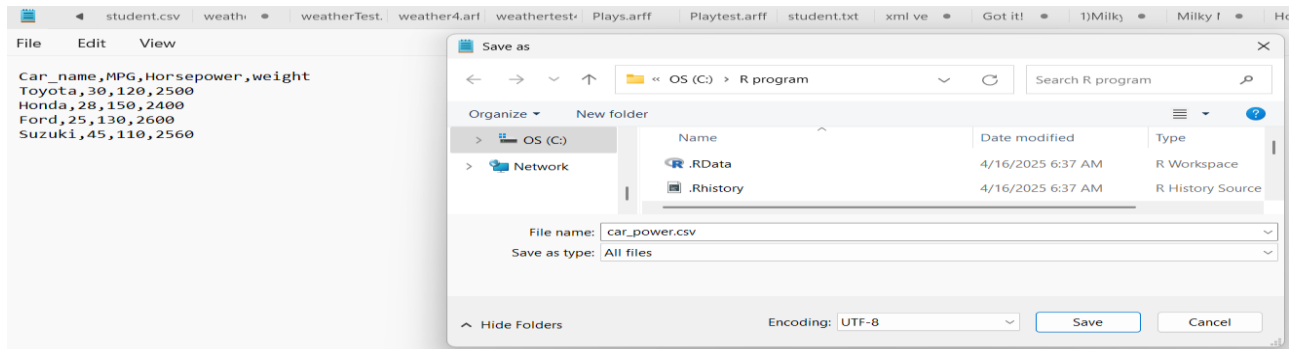

Program No: 3

Program: R code to perform importing data from text file and excel file.

Date:

Reg. No: 24251106

Data set using csv formatted file



#Read data stored in car_power.csv file

```
my_data <- read.csv("car_power.csv",header = FALSE)
```

```
print(my_data)
```

Output:

| Console | Terminal x | Background Jobs x |
|---|------------|-------------------|
| R 4.4.2 · C:/R program/ ↗ | | |
| > #Read data stored in car_power.csv file | | |
| > my_data <- read.csv("car_power.csv",header = FALSE) | | |
| > print(my_data) | | |
| V1 V2 V3 V4 | | |
| 1 Car_name MPG Horsepower weight | | |
| 2 Toyota 30 120 2500 | | |
| 3 Honda 28 150 2400 | | |
| 4 Ford 25 130 2600 | | |
| 5 Suzuki 45 110 2560 | | |

#Importing Data from an Excel file(student.xlsx)

| | A | B | C | D | E |
|---|----|--------|--------|-------|---------|
| 1 | id | name | course | fees | Column1 |
| 2 | 1 | ashith | Msc | 25000 | |
| 3 | 2 | rahul | MCA | 45000 | |
| 4 | 3 | mavee | MBA | 60000 | |
| 5 | 4 | brian | Msc | 25000 | |
| 6 | 5 | avil | MBA | 45000 | |
| 7 | | | | | |

#Install and load readxl package

```
install.packages('readxl')
```

```
library(readxl)
```

#Specify Excel file name

```
excel_file <- ("studentd.xlsx")
```

```
excel_data <- read_excel(excel_file)
```

```
print(excel_data)
```

Output:

```
Console Terminal x Background Jobs x
R - R 4.4.2 - C:/R program/
> #Specify Excel file name
> excel_file <- ("studentd.xlsx")
> excel_data <- read_excel(excel_file)
> print(excel_data)
# A tibble: 5 x 5
  id name   course fees Column1
<dbl> <chr> <chr> <dbl> <lgl>
1     1 ashith Msc    25000 NA
2     2 rahul  MCA    45000 NA
3     3 mavee MBA    60000 NA
4     4 brian  Msc    25000 NA
5     5 avil   MBA    45000 NA
```

Program: 4

Program: Implement R program using functions to find the mean, median, standard deviation of vector (do not use built in functions) input the vector elements from the keyboard.

Date:

Reg. No: 24251106

Function to calculate mean of a vector

```
calculate_mean <- function(vec) {  
  sum_vec <- sum(vec)  
  n <- length(vec)  
  mean_val <- sum_vec / n  
  return(mean_val)  
}
```

#Function to calculate median of a vector

```
calculate_median <- function(vec) {  
  sorted_vec <- sort(vec)  
  n <- length(vec)  
  if (n %% 2 != 0) {  
    # If the value is Odd  
    median_val <- sorted_vec[(n + 1) / 2]  
  } else {  
    median_val <- (sorted_vec[n / 2] + sorted_vec[(n / 2) + 1]) / 2  
  }  
  return(median_val)  
}
```

#Function to calculate standard deviation of a vector

```
calculate_sd <- function(vec) {  
  n <- length(vec)  
  mean_val <- calculate_mean(vec)  
  squared_deff <- (vec - mean_val)^2  
  std_dev_val <- sqrt(sum(squared_deff) / (n - 1))  
  return(std_dev_val)  
}
```

#Input vector Elements from the keyboard

```
vec <- numeric(0)  
while (TRUE) {  
  element <- readline(prompt = "Enter an element (or 'done' to finish): ")  
  if (element == "done") {  
    break  
  }  
  vec <- c(vec, as.numeric(element))  
}
```

Calculate mean, median, and standard deviation

```
mean_val <- calculate_mean(vec)  
median_val <- calculate_median(vec)  
std_dev_val <- calculate_sd(vec)
```

Print the results

```
cat("Vector:", vec, "\n")  
cat("Mean:", mean_val, "\n")  
cat("Median:", median_val, "\n")  
cat("Standard Deviation:", std_dev_val, "\n")
```

Output:

```
Console Terminal × Background Jobs ×
R 4.4.2 · ~/
> vec <- numeric(0)
> while (TRUE) {
+   element <- readline(prompt = "Enter an element (or 'done' to finish): ")
+   if (element == "done") {
+     break
+   }
+   vec <- c(vec, as.numeric(element))
+ }
Enter an element (or 'done' to finish): 1
Enter an element (or 'done' to finish): 2
Enter an element (or 'done' to finish): 3
Enter an element (or 'done' to finish): 4
Enter an element (or 'done' to finish): 5
Enter an element (or 'done' to finish): 6
Enter an element (or 'done' to finish): 12
Enter an element (or 'done' to finish): 69
Enter an element (or 'done' to finish): 45
Enter an element (or 'done' to finish): done
>
```

```
Console Terminal × Background Jobs ×
R 4.4.2 · ~/
> # Calculate mean, median, and standard deviation
> mean_val <- calculate_mean(vec)
> median_val <- calculate_median(vec)
> std_dev_val <- calculate_sd(vec)
>
> # Print the results
> cat("Vector:", vec, "\n")
Vector: 1 2 3 4 5 6 12 69 45
> cat("Mean:", mean_val, "\n")
Mean: 16.33333
> cat("Median:", median_val, "\n")
Median: 5
> cat("Standard Deviation:", std_dev_val, "\n")
Standard Deviation: 24.03123
```

Program: 5

Program: R code to Import the data from text file and visualize using data using any 5 plots

Date:

Reg. No: 24251106

Create a students.txt file in C drive. The file contains below data

| File | Edit | View |
|-------|-------|-----------|
| | | |
| RegNo | Name | Age Score |
| 1 | Riha | 13 47 |
| 2 | Riya | 14 39 |
| 3 | Eva | 15 67 |
| 4 | Jen | 13 86 |
| 5 | Ash | 16 91 |
| 6 | Rashi | 17 55 |

#Import the txt file

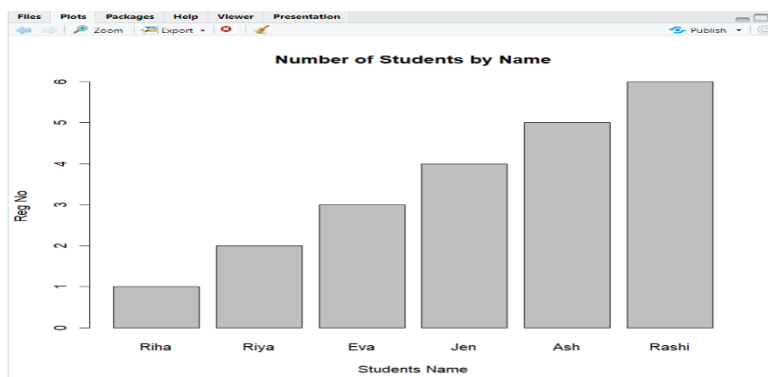
```
Students_data <- read.table("C:/R program/students.txt", header = TRUE)
```

#Visualizethe data

#1. Bar Plot

```
barplot(Students_data$RegNo, names.arg = Students_data$Name,  
        main = "Number of Students by Name", xlab="Students Name", ylab="Reg No")
```

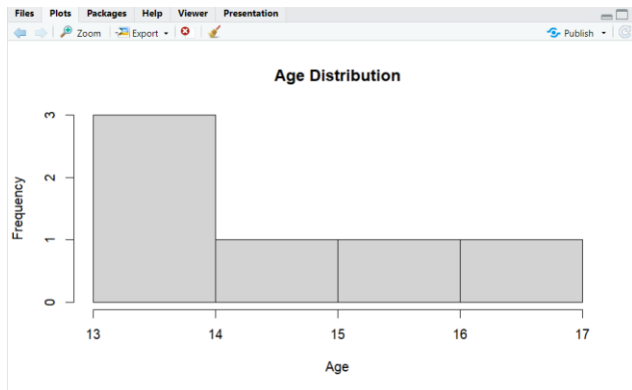
Output:



#2. Histogram (Distribution of age)

```
hist(Students_data$Age, main = "Age Distribution", xlab = "Age")
```

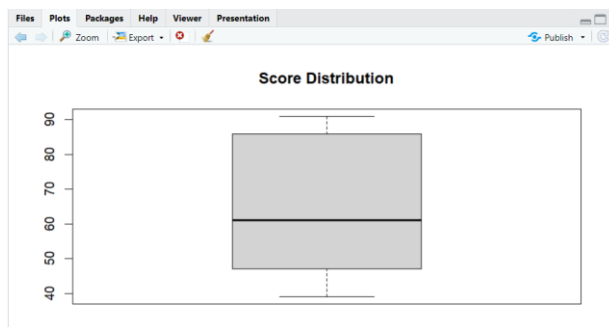
Output:



#3. Box Plot (Score Distribution)

```
boxplot(Students_data$Score, main = "Score Distribution")
```

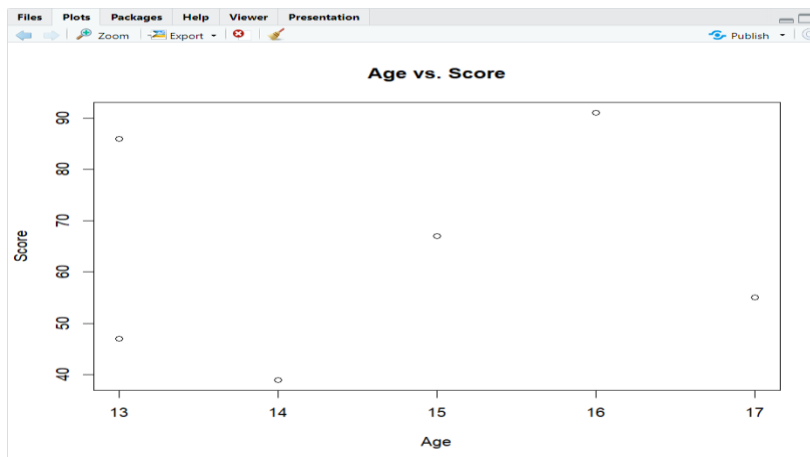
Output:



#Scatter Plot (Age vs. Score)

```
plot(Students_data$Age, Students_data$Score, main = "Age vs. Score", xlab = "Age", ylab = "Score")
```

Output:



#5. Pie Chart (Proportion of Students by Age Group):

```
age_groups <- cut(Students_data$Age, breaks = c(13, 14, 15, 16), labels = c("13-14", "15  
16", "17+"))  
pie(table(age_groups), main = "Proportion of Students by Age Group")
```

Output:

