Godavari College of Engineering, Jalgaon
Department of Computer

Continuous Assessment I/II

Introduction to Data Science with R

Date:-_____

Name of Student:- _____

Class:-_____   **PRN No:-_____**

Title: -

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Aim: -

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Software Requirement: _____

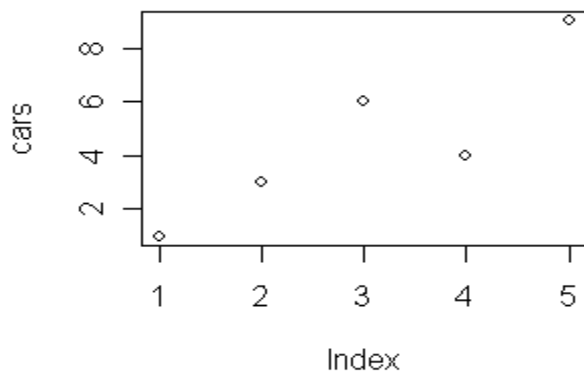**Hardware Requirement:-** _____

Theory:-

Simple Graphs with R

1. Line Charts
2. Bar Charts
3. Histograms
4. Pie Charts
5. Dotcharts

Line Charts

Produce a very simple graph using the values in the car vector

```
# Define the cars vector with 5 values
cars <- c(1, 3, 6, 4, 9)

# Graph the cars vector with all defaults
plot(cars)
```


Add a title, a line to connect the points, and some color

```
# Define the cars vector with 5 values
cars <- c(1, 3, 6, 4, 9)

# Graph cars using blue points overlayed by a line
plot(cars, type="o", col="blue")

# Create a title with a red, bold/italic font
title(main="Autos", col.main="red", font.main=4)
```
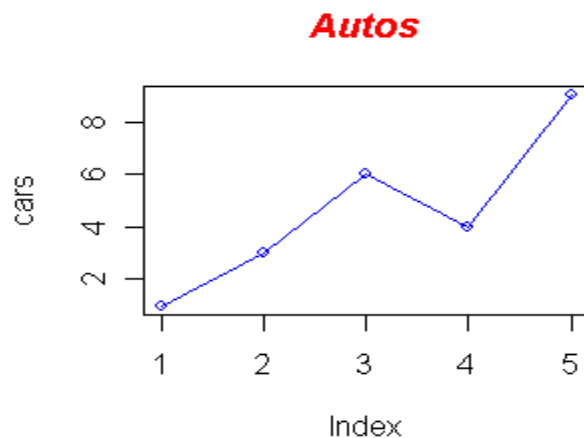
Add a red line for trucks and specify the y-axis range directly so it will be large enough to fit the truck data

# Define 2 vectors
cars <- c(1, 3, 6, 4, 9)
trucks <- c(2, 5, 4, 5, 12)

Graph cars using a y axis that ranges from 0 to 12
plot(cars, type="o", col="blue", **ylim=c(0,12))**

Graph trucks with red dashed line and square points
lines(trucks, type="o", pch=22, lty=2, col="red")

# Create a title with a red, bold/italic font
title(main="Autos", col.main="red", font.main=4)
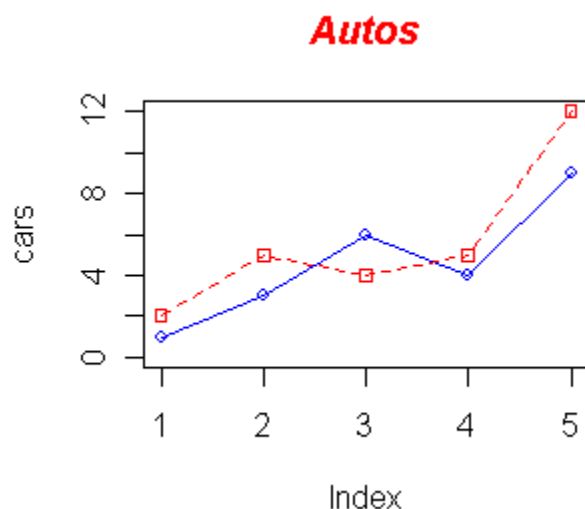
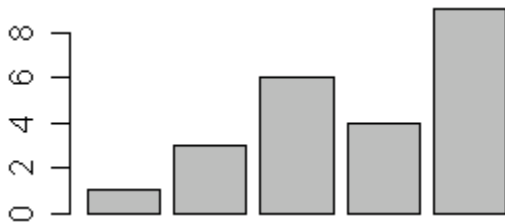Read the graph data directly from a tab-delimited file. Save the file in the C:/R directory

autos.dat

cars	trucks	suvs
1	2	4
3	5	4
6	4	6
4	5	6
9	12	16

Bar Charts

Create a simple bar chart graphing the cars vector

```
# Define the cars vector with 5 values
cars <- c(1, 3, 6, 4, 9)

# Graph cars
barplot(cars)
```


Read the auto data from the autos.dat data file, add labels, blue borders around the bars, and density lines

```
# Read values from tab-delimited autos.dat
autos_data <- read.table("C:/R/autos.dat", header=T, sep="\t")

# Graph cars with specified labels for axes.  Use blue
# borders and diagnal lines in bars.
barplot(autos_data$cars, main="Cars", xlab="Days",
  ylab="Total", names.arg=c("Mon","Tue","Wed","Thu","Fri"),
  border="blue", density=c(10,20,30,40,50))
```
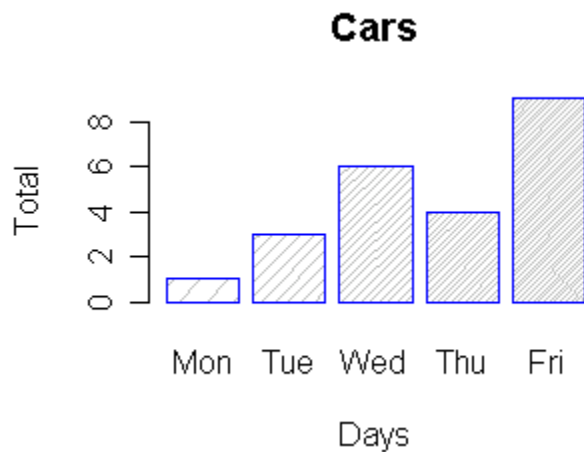
Graph the total number of autos per day using some color and show a legend

```
# Read values from tab-delimited autos.dat
autos_data <- read.table("C:/R/autos.dat", header=T, sep="\t")

# Graph autos with adjacent bars using rainbow colors
barplot(as.matrix(autos_data), main="Autos", ylab= "Total",
  beside=TRUE, col=rainbow(5))

# Place the legend at the top-left corner with no frame
# using rainbow colors
legend("topleft", c("Mon","Tue","Wed","Thu","Fri"), cex=0.6,
  bty="n", fill=rainbow(5));
```
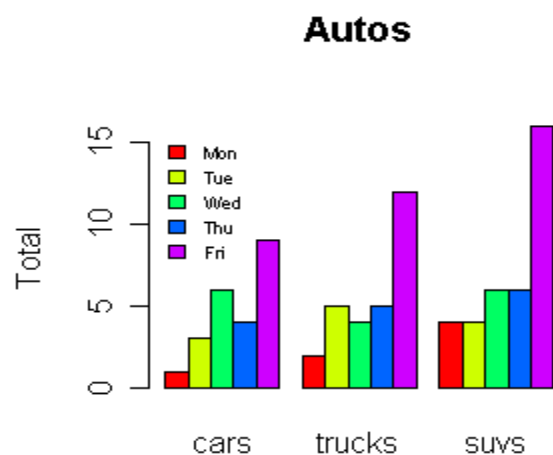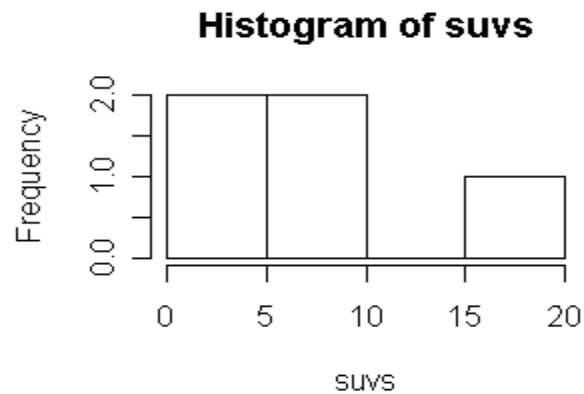

Histograms

Start with a simple histogram graphing the distribution of the suvs vector

```
# Define the suvs vector with 5 values
suvs <- c(4,4,6,6,16)

# Create a histogram for suvs
hist(suvs)
```

Histogram of suvs

Read the auto data from the autos.dat data file and plot a histogram of the combined car, truck, and suv data in color.

```
# Read values from tab-delimited autos.dat
autos_data <- read.table("C:/R/autos.dat", header=T, sep="\t")

# Concatenate the three vectors
autos <- c(autos_data$cars, autos_data$trucks,
   autos_data$suvs)

# Create a histogram for autos in light blue with the y axis
# ranging from 0-10
hist(autos, col="lightblue", ylim=c(0,10))
```
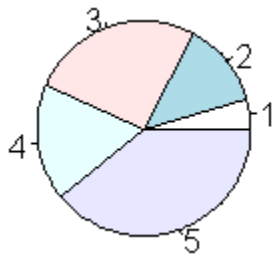
Histogram of autos
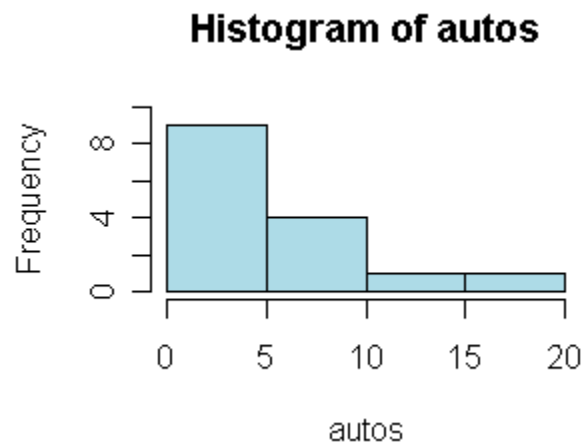
Pie Charts

Start with a simple pie chart graphing the cars vector

```
# Define cars vector with 5 values
cars <- c(1, 3, 6, 4, 9)

# Create a pie chart for cars
pie(cars)
```


Add a heading, change the colors, and define our own labels

```
# Define cars vector with 5 values
cars <- c(1, 3, 6, 4, 9)

# Create a pie chart with defined heading and
# custom colors and labels
pie(cars, main="Cars", col=rainbow(length(cars)),
   labels=c("Mon","Tue","Wed","Thu","Fri"))
```
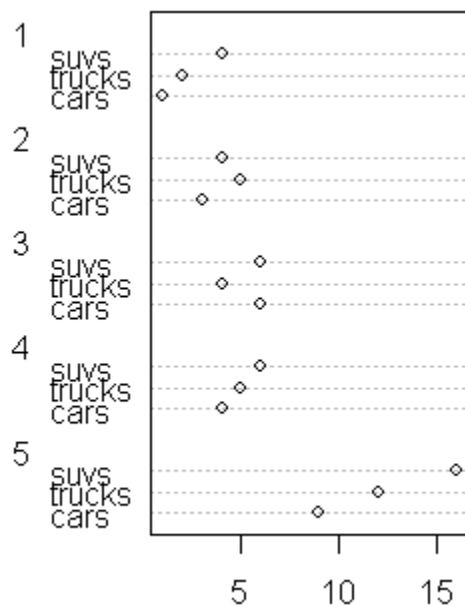
Dotcharts

Create a simple dotchart graphing the autos data

```
# Read values from tab-delimited autos.dat
autos_data <- read.table("C:/R/autos.dat", header=T, sep="\t")

# Create a dotchart for autos
dotchart(t(autos_data)
```
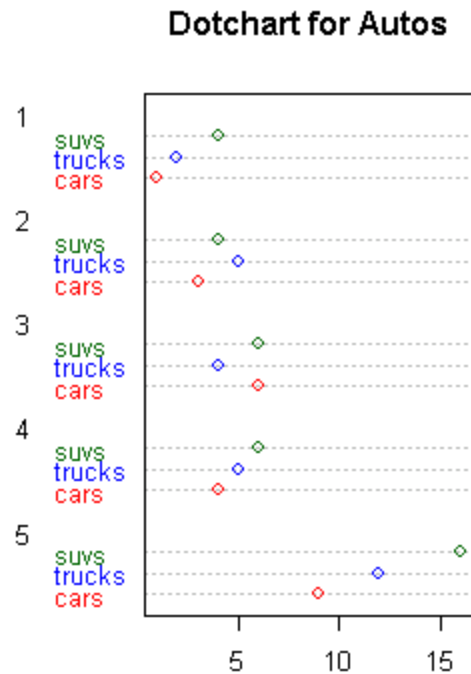

Make the dotchart a colorful

```
# Read values from tab-delimited autos.dat
autos_data <- read.table("C:/R/autos.dat", header=T, sep="\t")

# Create a colored dotchart for autos with smaller labels
dotchart(t(autos_data), color=c("red","blue","darkgreen"),
   main="Dotchart for Autos", cex=0.8)
```

Dotchart for Autos

Source Code:-

```
# Line Charts 1
# Define the cars vector with 5 values
cars <- c(1, 3, 6, 4, 9)

# Graph the cars vector with all defaults
plot(cars)

# Line Charts 2

# Define the cars vector with 5 values
cars <- c(1, 3, 6, 4, 9)

# Graph cars using blue points overlayed by a line
plot(cars, type="o", col="blue")

# Create a title with a red, bold/italic font
title(main="Autos", col.main="red", font.main=4)

# Line Charts 3

# Define 2 vectors
cars <- c(1, 3, 6, 4, 9)
trucks <- c(2, 5, 4, 5, 12)
```

```
# Graph cars using a y axis that ranges from 0 to 12
plot(cars, type="o", col="blue", ylim=c(0,12))

# Graph trucks with red dashed line and square points
lines(trucks, type="o", pch=22, lty=2, col="red")

# Create a title with a red, bold/italic font
title(main="Autos", col.main="red", font.main=4)

# Bar Charts 1

# Define the cars vector with 5 values
cars <- c(1, 3, 6, 4, 9)

# Graph cars
barplot(cars)

# Bar Charts 2

# Read values from tab-delimited autos.dat
autos_data <- read.table("/home/madhuri/DSR_OUTPUT/autos.dat", header=T, sep="\t")

# Graph cars with specified labels for axes.  Use blue
# borders and diagnal lines in bars.
barplot(autos_data$cars, main="Cars", xlab="Days",
     ylab="Total", names.arg=c("Mon","Tue","Wed","Thu","Fri"),
     border="blue", density=c(10,20,30,40,50))

# Bar Charts 3

# Read values from tab-delimited autos.dat
autos_data <- read.table("/home/madhuri/DSR_OUTPUT/autos.dat", header=T, sep="\t")

# Graph autos with adjacent bars using rainbow colors
barplot(as.matrix(autos_data), main="Autos", ylab= "Total",
     beside=TRUE, col=rainbow(5))

# Place the legend at the top-left corner with no frame
# using rainbow colors
legend("topleft", c("Mon","Tue","Wed","Thu","Fri"), cex=0.6,
     bty="n", fill=rainbow(5));

# Histograms 1

# Define the suvs vector with 5 values
suvs <- c(4,4,6,6,16)
```

```r
# Create a histogram for suvs
hist(suvs)


# Histograms 2

# Read values from tab-delimited autos.dat
autos_data <- read.table("/home/madhuri/DSR_OUTPUT/autos.dat", header=T, sep="\t")

# Concatenate the three vectors
autos <- c(autos_data$cars, autos_data$trucks,
        autos_data$suvs)

# Create a histogram for autos in light blue with the y axis
# ranging from 0-10
hist(autos, col="lightblue", ylim=c(0,10))

# Pie Charts 1

# Define cars vector with 5 values
cars <- c(1, 3, 6, 4, 9)

# Create a pie chart for cars
pie(cars)

# Pie Charts 2

# Define cars vector with 5 values
cars <- c(1, 3, 6, 4, 9)

# Create a pie chart with defined heading and
# custom colors and labels
pie(cars, main="Cars", col=rainbow(length(cars)),
    labels=c("Mon","Tue","Wed","Thu","Fri"))

# Dotcharts 1

# Read values from tab-delimited autos.dat
autos_data <- read.table("/home/madhuri/DSR_OUTPUT/autos.dat", header=T, sep="\t")

# Create a dotchart for autos
dotchart(t(autos_data))

# Dotcharts 2
```
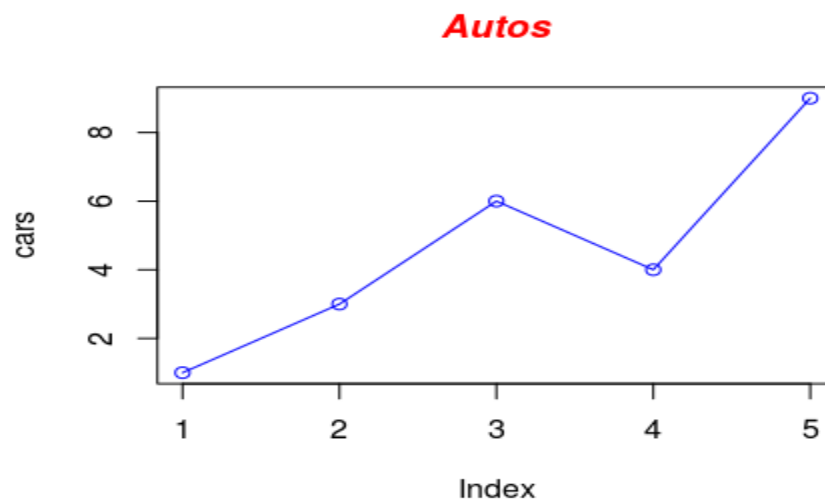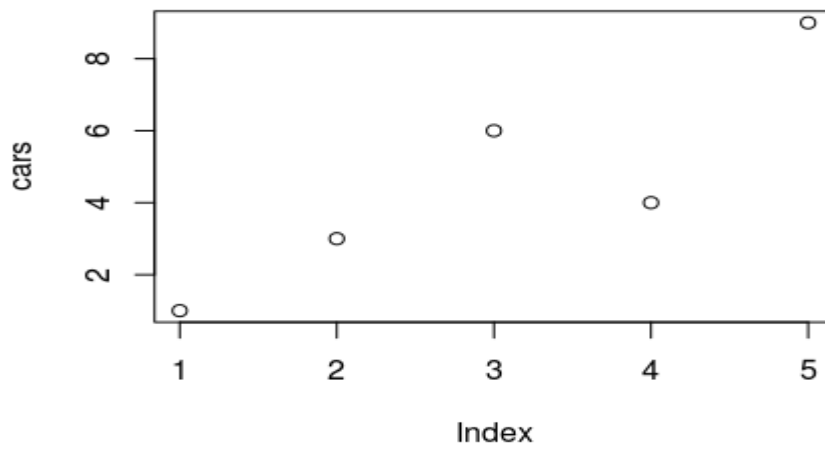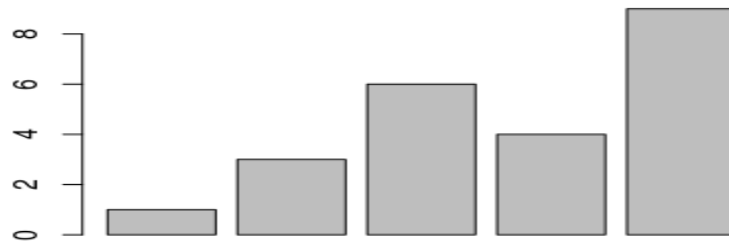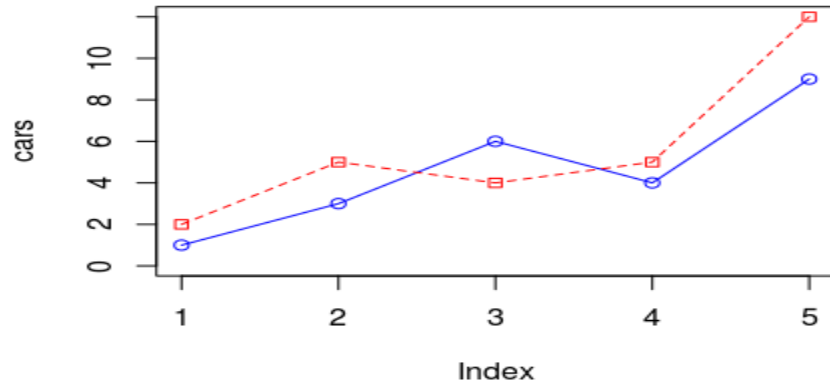
# Read values from tab-delimited autos.dat
autos_data <- read.table("/home/madhuri/DSR_OUTPUT/autos.dat", header=T, sep="\t")

Create a colored dotchart for autos with smaller labels
dotchart(t(autos_data), color=c("red","blue","darkgreen"),
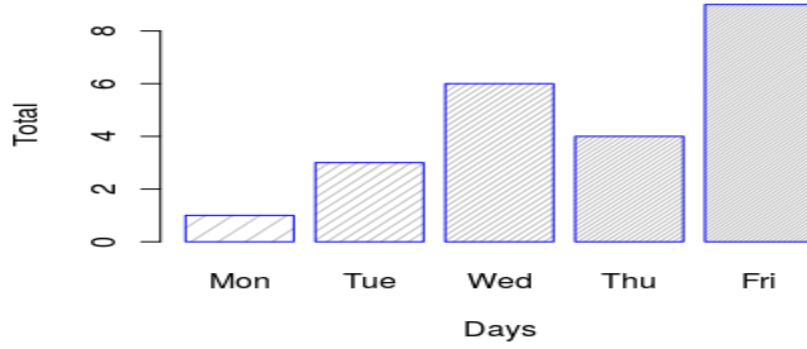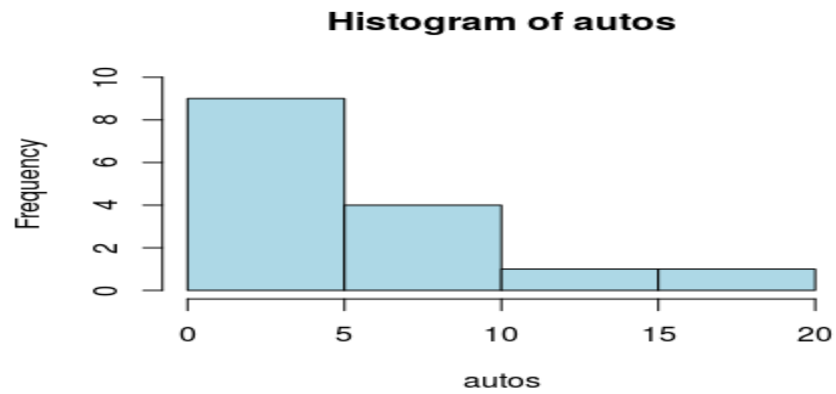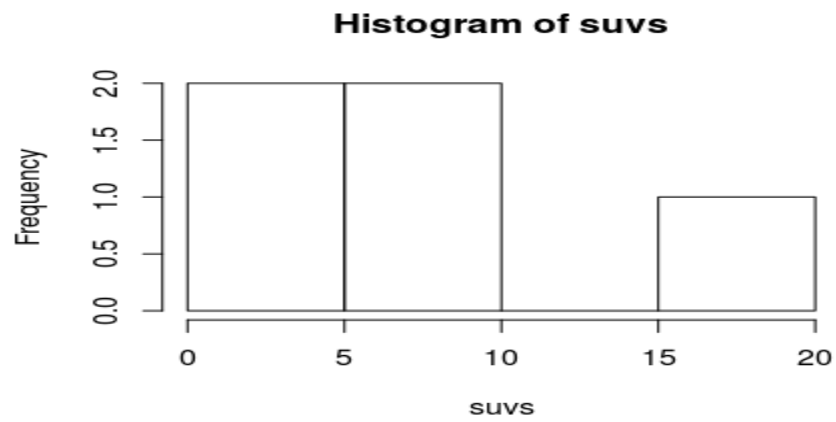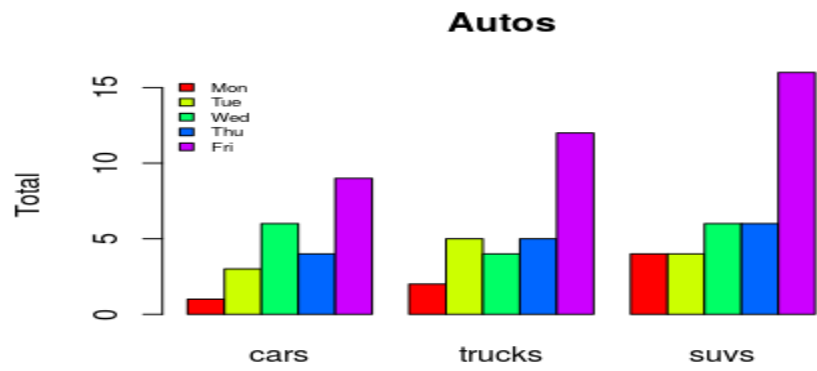   main="Dotchart for Autos", cex=0.8)

Output:-

Autos

Cars

Autos

Histogram of suvs

Histogram of autos

Cars

Dotchart for Autos

Conclusion:-

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