

<b>Name of Student: Pushkar Sane</b>		
<b>Roll Number: 45</b>		<b>Lab Assignment Number: 5</b>
<b>Title of Lab Assignment: Write commands for Working with different types of R Charts and Graphs like Histograms, Box Plots, Bar Charts, Line Graphs, Scatterplots, Pie Charts.</b>		
<b>DOP: 13-10-2023</b>		<b>DOS: 19-10-2023</b>
<b>CO Mapped:</b> <b>CO4</b>	<b>PO Mapped:</b> <b>PO1, PO2, PO3, PO4, PO5,</b> <b>PO7, PO8, PO9, PO12, PSO1,</b> <b>PSO2</b>	<b>Signature:</b>

**Practical No. 5**

**Aim:** Write commands for Working with different types of R Charts and Graphs like Histograms, Box Plots, Bar Charts, Line Graphs, Scatterplots, Pie Charts.

**Description:****1. Histogram:**

- a. Write commands for Working with different types of R Charts and Graphs like Histograms, Box Plots, Bar Charts, Line Graphs, Scatterplots, Pie Charts

- b. Example:

```
data <- c(22, 30, 35, 40, 42, 45, 50, 55, 60, 65)
# Create a histogram
hist(data,
main = "Histogram Example",
xlab = "Values",
col = "blue",
border = "black",
breaks = 5) # You can customize the number of bins
```

- c. Here,

- **`data`**: The data you want to create a histogram for.
- **`main`**: The title of the histogram.
- **`xlab`**: Label for the x-axis.
- **`col`**: Color of the bars.
- **`border`**: Color of the border of the bars.
- **`breaks`**: Number of bins.

**2. Boxplots:**

- a. Boxplots are used to visualize the distribution and spread of a dataset. You can create a boxplot using the ``boxplot()`` function:

- b. Example:

```
data <- c(22, 30, 35, 40, 42, 45, 50, 55, 60, 65)
# Create a boxplot
boxplot(data,
```

```
main = "Boxplot Example",  
col = "lightblue",  
horizontal = TRUE) # Create a horizontal boxplot
```

c. Here,

- **`data`**: The data for which you want to create a boxplot.
- **`main`**: The title of the boxplot.
- **`col`**: Color of the boxes.
- **`horizontal`**: Set to **`TRUE`** for a horizontal boxplot.

### 3. Bar Charts:

a. Bar charts are used to display categorical data. You can create bar charts using the **`barplot()`** function or the **`ggplot2`** package. Here's a basic example using the **`barplot()`** function:

b. Example:

```
categories <- c("Category A", "Category B", "Category C")  
values <- c(10, 20, 30)  
# Create a bar chart  
barplot(values,  
        names.arg = categories,  
        main = "Bar Chart Example",  
        col = "green")
```

c. Here,

- **`values`**: Numeric values for the bars.
- **`names.arg`**: Names for the categories.
- **`main`**: The title of the bar chart.
- **`col`**: Color of the bars.

### 4. Line Graphs:

a. Line graphs are used to visualize trends and relationships between data points over time or a continuous variable. You can create line graphs using the **`plot()`** function.

b. Example:

```
x <- 1:10  
y <- x^2
```

```
# Create a line graph
plot(x, y,
     type = "l", # "l" for lines
     main = "Line Graph Example",
     xlab = "Time",
     ylab = "Value",
     col = "red")
```

c. Here,

- **`x` and `y`**: The data for the x and y axes.
- **`type`**: "l" for a line graph.
- **`main`**: The title of the line graph.
- **`xlab` and `ylab`**: Labels for the x and y axes.
- **`col`**: Color of the line.

## 5. Scatterplots:

a. Scatterplots are used to show relationships between two variables. You can create scatterplots using the `plot()` function.

b. Example:

```
x <- c(1, 2, 3, 4, 5)
y <- c(2, 4, 6, 8, 10)
# Create a scatterplot
plot(x, y,
     main = "Scatterplot Example",
     xlab = "X-Axis",
     ylab = "Y-Axis",
     col = "blue")
```

c. Here,

- **`x` and `y`**: The data for the x and y axes.
- **`main`**: The title of the scatterplot.
- **`xlab` and `ylab`**: Labels for the x and y axes.
- **`col`**: Color of the points.

**6. Pie Charts:**

- a. Pie charts are used to represent parts of a whole. You can create pie charts using the `pie()` function.
- b. Example:

```
data <- c(10, 20, 30)
labels <- c("Category A", "Category B", "Category C")
# Create a pie chart
pie(data,
     labels = labels,
     main = "Pie Chart Example",
     col = rainbow(length(data)))
```
- c. Here,
  - `data`: A vector of values for each segment.
  - `labels`: Labels for each segment.
  - `main`: The title of the pie chart.
  - `col`: Color palette for the segments.

**Code: (Script File)**

```
setwd("F:/Pushkar/MCA/Sem-1/DAR")
```

```
data <- read.csv("SalesData1.csv")
data
```

```
# Create a histogram
```

```
hist(data$toothpaste, main = "Histogram", xlab = "X-axis label", col = "blue", border = "black")
```

```
# Create a boxplot
```

```
boxplot(data$bathingsoap, main = "Boxplot", ylab = "Y-axis label", col = "green")
```

```
# Create a bar chart
```

```
barplot(table(data$total_units), main = "Bar Chart", xlab = "X-axis label", ylab = "Y-axis label", col = "purple")
```

```
# Create a line graph
```

```
plot(data$total_units, data$total_profit, type = "l", col = "red", main = "Line Graph", xlab = "X-axis label", ylab = "Y-axis label")
```

```
# Create a scatterplot
```

```
plot(data$total_units, data$total_profit, col = "orange", main = "Scatterplot", xlab = "X-axis label", ylab = "Y-axis label")
```

```
# Create a pie chart
```

```
slices <- c(30, 10, 20, 15, 25)
```

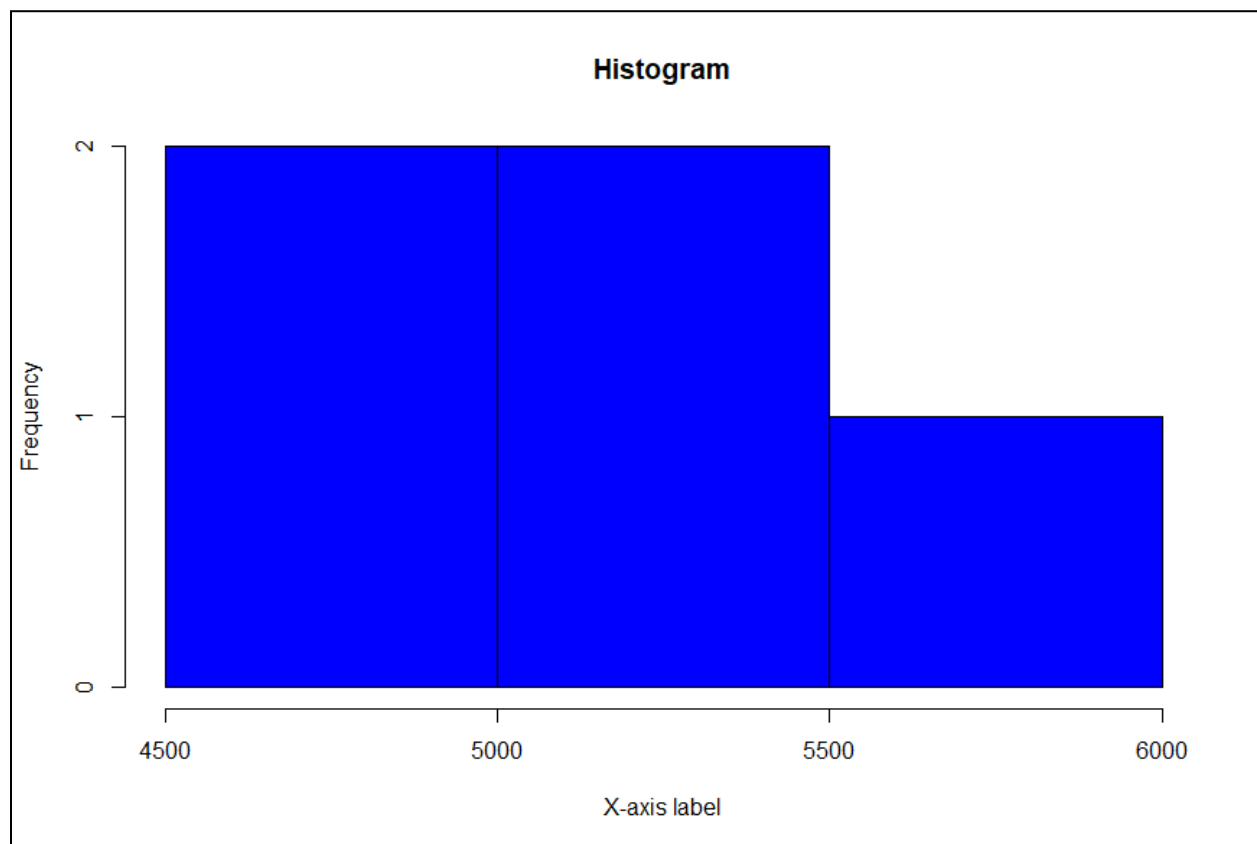
```
lbls <- c("A", "B", "C", "D", "E")
```

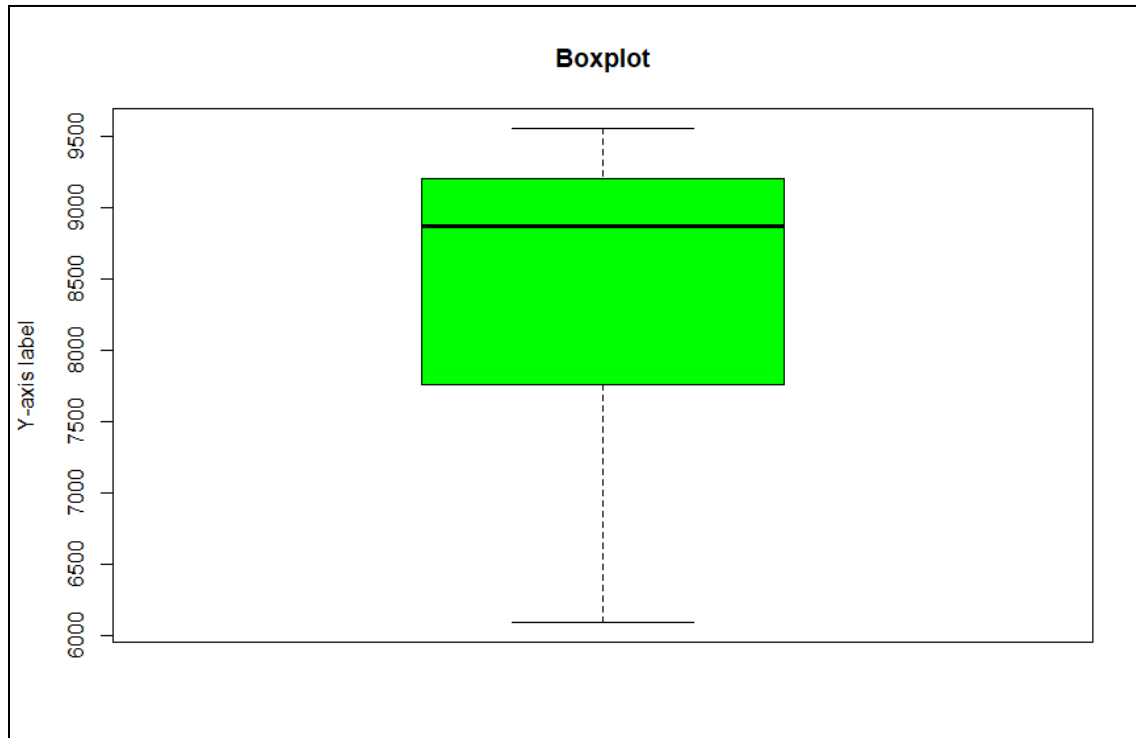
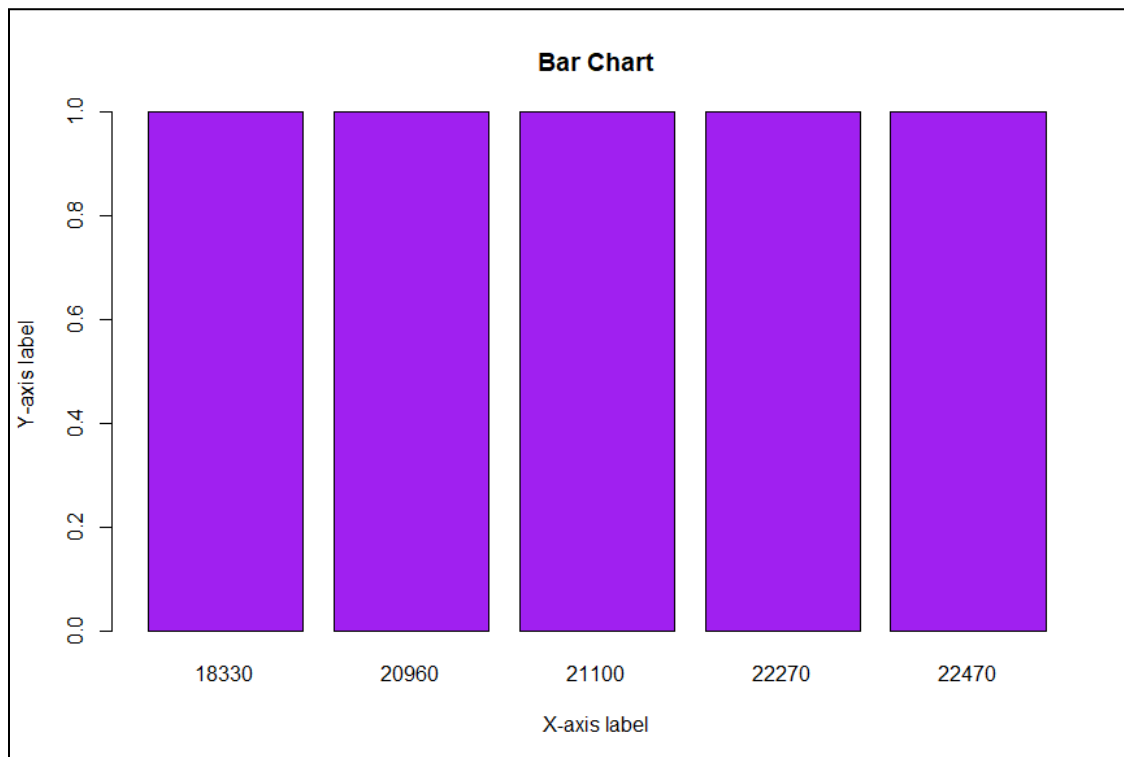
```
pie(slices, labels = lbls, main = "Pie Chart")
```

### **Output:**

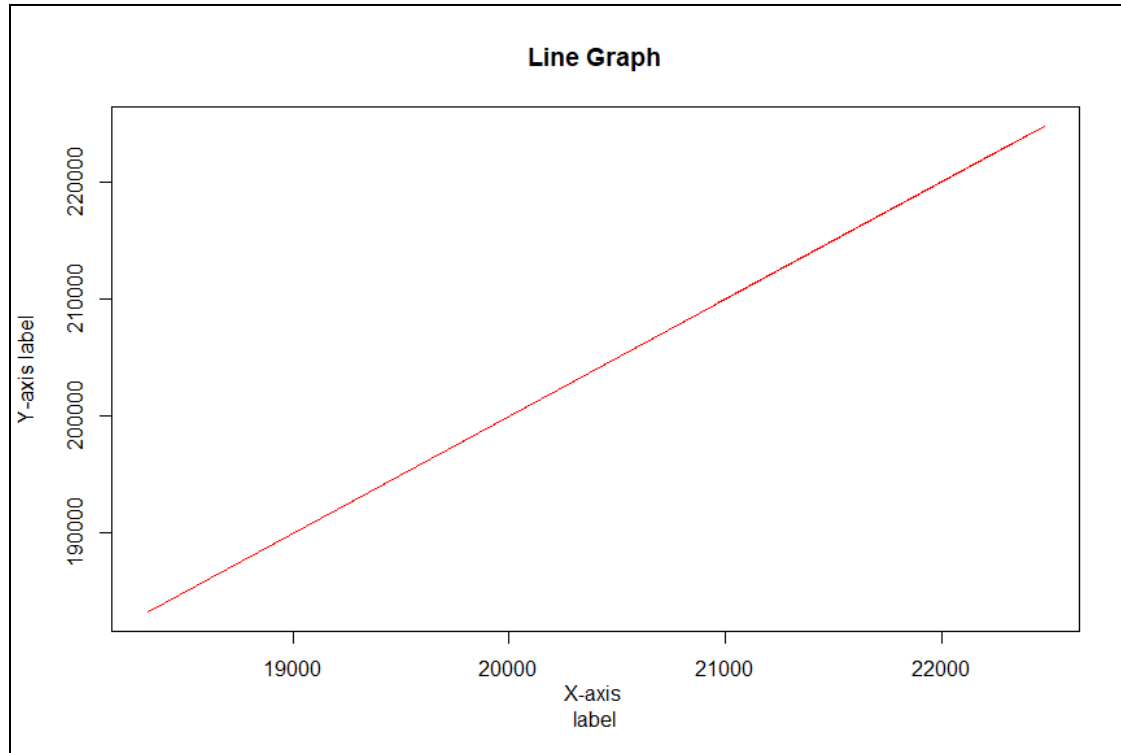
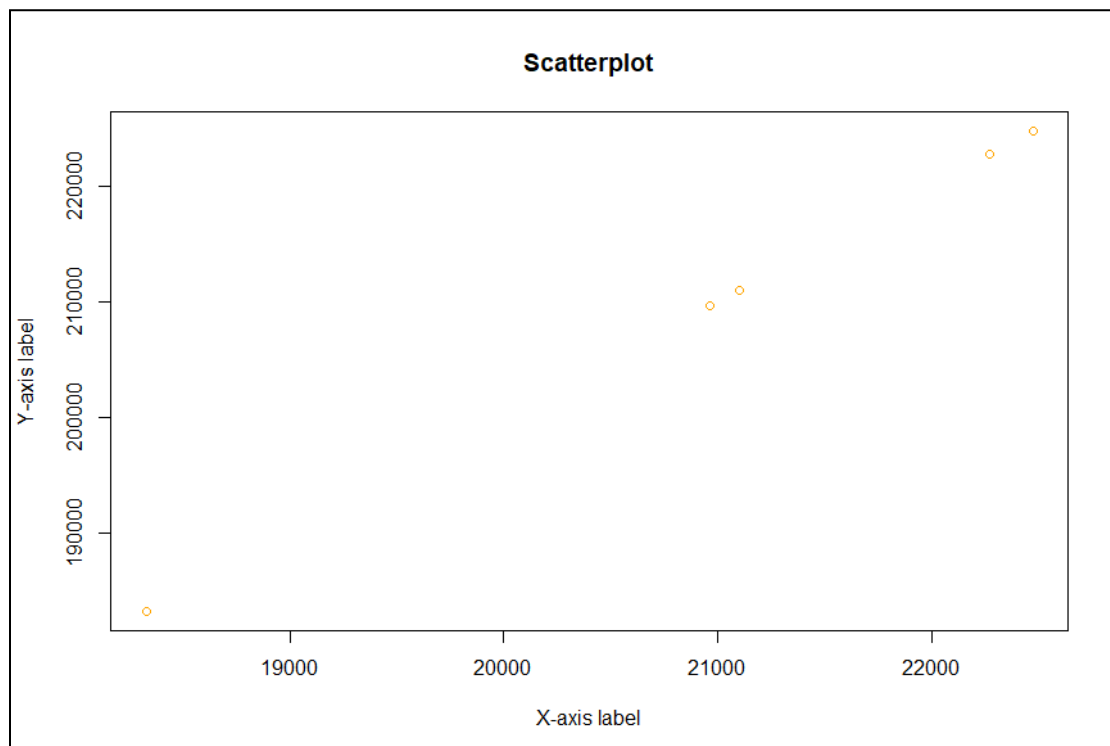
```
> setwd("F:/Pushkar/MCA/Sem-1/DAR")
> data <- read.csv("SalesData1.csv")
> data
  month_number facecream facewash toothpaste bathingsoap shampoo moisturizer
total_units total_profit
1           1      2500      1500      5200      9200      1200      1500
21100      211000
2           2      2630      1200      5100      6100      2100      1200
18330      183300
3           3      2140      1340      4550      9550      3550      1340
22470      224700
4           4      3400      1130      5870      8870      1870      1130
22270      222700
5           5      3600      1740      4560      7760      1560      1740
20960      209600
> # Create a histogram
> hist(data$toothpaste, main = "Histogram", xlab = "X-axis label", col = "blue", border = "black")
> # Create a boxplot
> boxplot(data$bathingsoap, main = "Boxplot", ylab = "Y-axis label", col = "green")
> # Create a bar chart
> barplot(table(data$total_units), main = "Bar Chart", xlab = "X-axis label", ylab = "Y-axis label", col = "purple")
> # Create a line graph
> plot(data$total_units, data$total_profit, type = "l", col = "red", main = "Line Graph", xlab = "X-axis
```

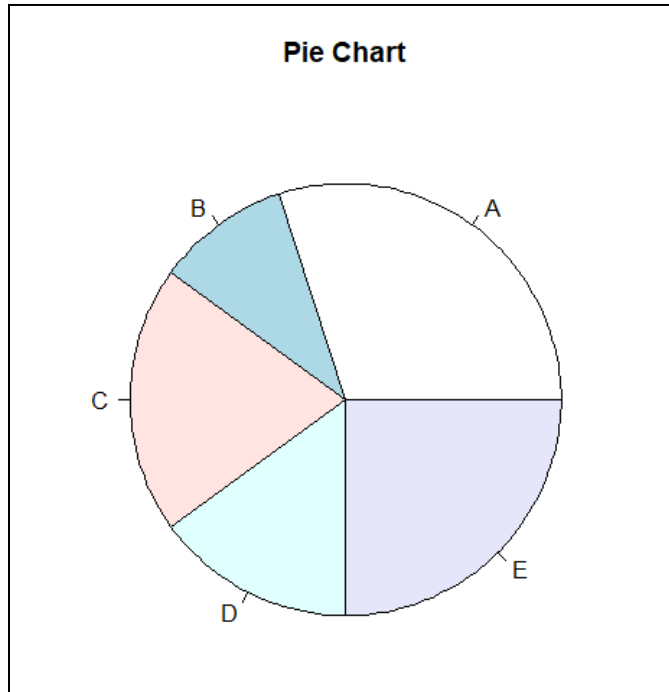
```
+ label", ylab = "Y-axis label")
> # Create a scatterplot
> plot(data$total_units, data$total_profit, col = "orange", main =
"Scatterplot", xlab = "X-axis label",
+      ylab = "Y-axis label")
> # Create a pie chart
> slices <- c(30, 10, 20, 15, 25)
> lbls <- c("A", "B", "C", "D", "E")
> pie(slices, labels = lbls, main = "Pie Chart")
```

**Histogram:**

**Boxplot:****Bar Chart:**



**Line Graph:****Scatter Plot:**

**Pie Chart:****Conclusion:**

In this practical, we learned different commands to perform data visualization operation on data using R programming.