	Marwadi University Faculty of Technology Department of Information and Communication Technology
Subject: Introduction to R and R Studio (01CT0106)	**Aim: Data Visualization and beautifying the charts and plots using ggplot**
Experiment: 09	**Date: 11/04/2023**	**Enrollment No: 92200133030**

Aim: Data Visualization and beautifying the charts and plots using ggplot

IDE: R Studio

Theory:

ggplot2 package in R Programming Language also termed as Grammar of Graphics is a free, open-source, and easy-to-use visualization package widely used in <u>R</u>. It is the most powerful visualization package written by Hadley Wickham.
It includes several layers on which it is governed. The layers are as follows:

Building Blocks of layers with the grammar of graphics
- Data: The element is the data set itself
- Aesthetics: The data is to map onto the Aesthetics attributes such as x-axis, y-axis, color, fill, size, labels, alpha, shape, line width, line type
- Geometrics: How our data being displayed using point, line, histogram, bar, boxplot
- Facets: It displays the subset of the data using Columns and rows
- Statistics: Binning, smoothing, descriptive, intermediate
- Coordinates: the space between data and display using Cartesian, fixed, polar, limits
- Themes: Non-data link

Program:
Write the program (R script) that beautifies the charts and plots using ggplot for the given visuals:
1. Bar Chart
2. Histogram
3. Pie Chart
4. Scatter Plot

```r
library(ggplot2)

data_1 <- data.frame(category = c("A", "B", "C", "D"),
                     value = c(10, 15, 7, 12))

ggplot(data_1, aes(x = category, y = value)) +
  geom_bar(stat = "identity",fill  = "cyan") +
  labs(x = "Category", y = "Value", title = "Bar Graph")
```

![Marwadi University logo]	**Marwadi University**
	Faculty of Technology
	Department of Information and Communication Technology
Subject: Introduction to R and R Studio (01CT0106)	**Aim: Data Visualization and beautifying the charts and plots using ggplot**
Experiment: 09	**Date: 11/04/2023**	**Enrollment No: 92200133030**

```r
library(ggplot2)
data_3 <- data.frame(values = c(10, 20, 15, 30, 25, 18, 12, 28, 22))

ggplot(data_3, aes(x = values)) +
  geom_histogram(binwidth = 5, fill = "grey", color = "black") +
  labs(x = "Values", y = "Frequency", title = "Histogram")
```

```r
data_2 <- data.frame(category = c("A", "B", "C", "D","E"),
                     value = c(30, 20, 15, 35,100))

library(ggplot2)

ggplot(data_2, aes(x = "", y = value, fill = category)) +
  geom_bar(stat = "identity", width = 1) +
  coord_polar(theta = "y") +
  labs(fill = "Category", title = "Pie-like Chart") +
  theme_void()
```
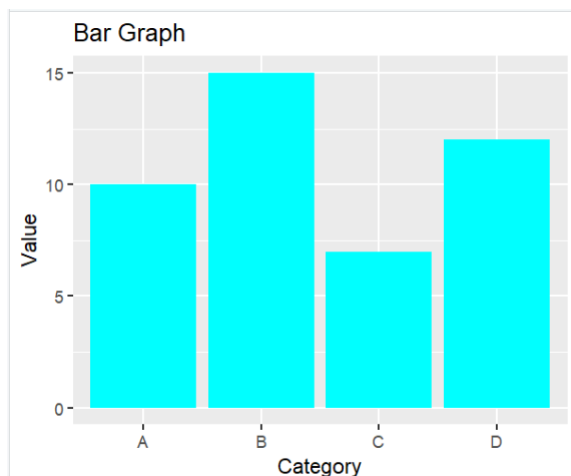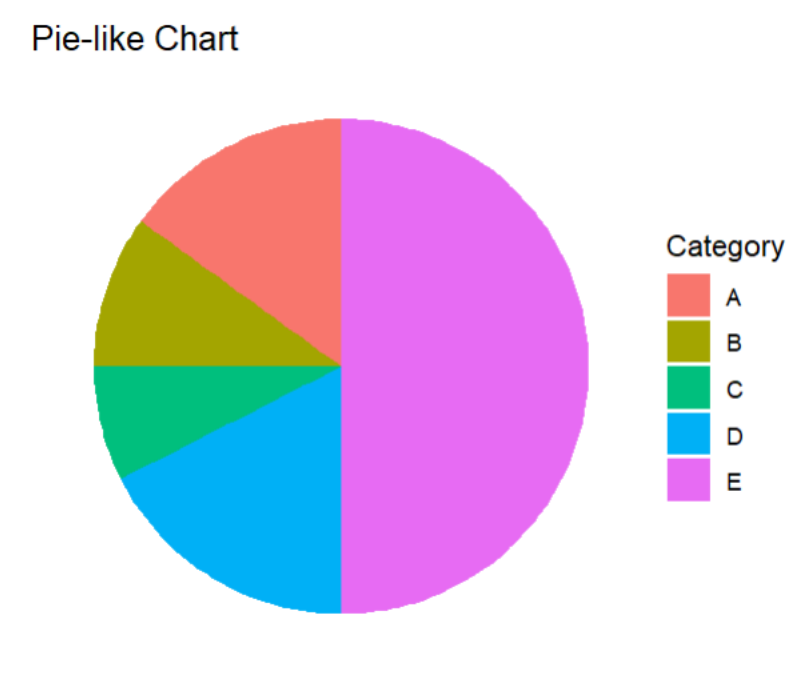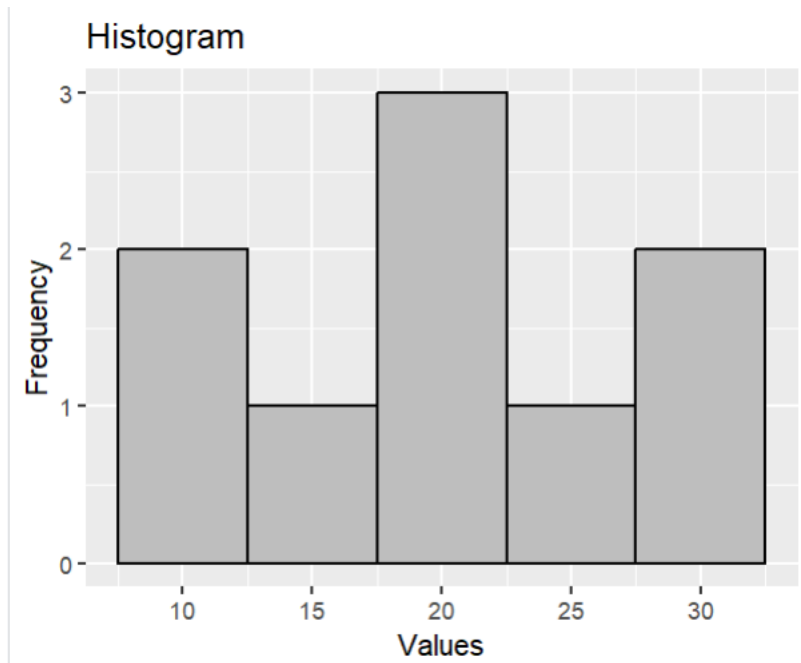
```r
data <- data.frame(x = c(1, 2, 3, 4, 5),
                   y = c(3, 5, 4, 6, 8))

library(ggplot2)
ggplot(data, aes(x = x, y = y)) +
  geom_point(col = "red") +
  labs(x = "X-axis", y = "Y-axis", title = "Scatter Plot")
```
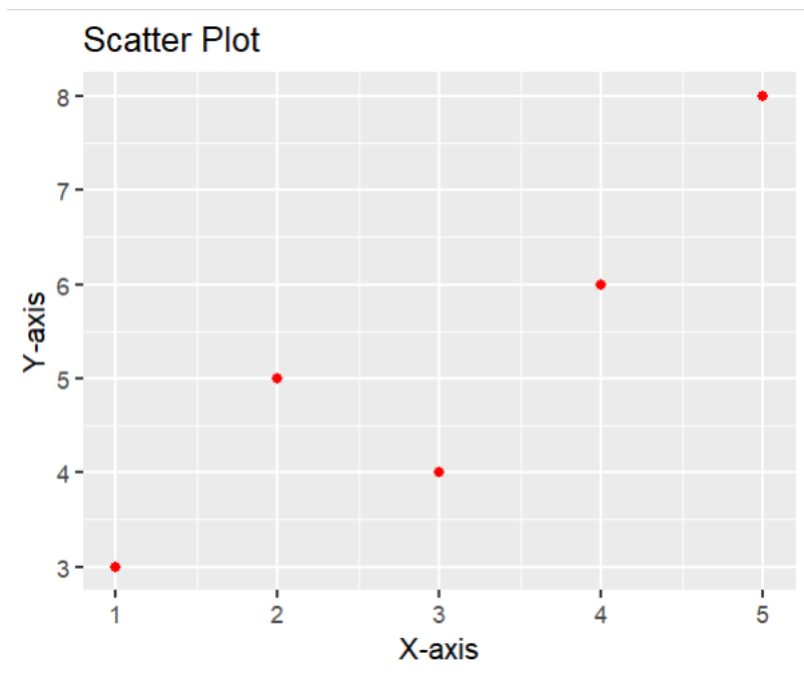
Output:

![Marwadi University logo]	**Marwadi University** **Faculty of Technology** **Department of Information and Communication Technology**	
Subject: Introduction to R and R Studio (01CT0106)	**Aim: Data Visualization and beautifying the charts and plots using ggplot**	
Experiment: 09	**Date: 11/04/2023**	**Enrollment No: 92200133030**

Marwadi University **Faculty of Technology** **Department of Information and Communication Technology**		
Subject: Introduction to R and R Studio (01CT0106)	**Aim:** Data Visualization and beautifying the charts and plots using ggplot	
Experiment: 09	**Date: 11/04/2023**	**Enrollment No: 92200133030**

Observation and Learnings:-

_____
_____
_____
_____
_____: