**Code:**

**#Step 1: Loading and Preparing the Data**

# Load necessary libraries library (ggplot2)

# Load the dataset

superstore\_data <- read.csv("D:/MSc DS/Semester 1/Retail Market Analysis/Practical/superstore\_data.csv") selected\_data <- superstore\_data[, c("Id","Year\_Birth", "Marital\_Status", "Education", "Dt\_Customer", "Recency", "NumStorePurchases", "NumWebPurchases", "NumWebVisitsMonth")]

selected\_data <- unique(selected\_data)

**# Plotting a histogram for Education** ggplot(selected\_data, aes(x = Education)) + geom\_bar(fill = "lightgreen", color = "black") + labs(title = "Bar Plot of Education",

x = "Education Level", y = "Count") +

theme(axis.text.x = element\_text(angle = 45, hjust = 1)) # Rotating x-axis labels for better readability

**#Pie chart for the Marital\_Status**

# Count occurrences of each marital status marital\_counts <- table(selected\_data$Marital\_Status) # Create a dataframe for plotting

marital\_df <- data.frame(Marital\_Status = names(marital\_counts), Count = as.numeric(marital\_counts))

# Plotting the pie chart

ggplot(marital\_df, aes(x = "", y = Count, fill = Marital\_Status)) + geom\_bar(stat = "identity", width = 1, color = "white") + coord\_polar("y") +

labs(title = "Marital Status Distribution", fill = "Marital Status") + theme\_void() +

scale\_fill\_brewer(palette = "Set3") # Set color palette as needed

**# Scatter plot for Age vs. Web Purchases and Store Purchases**

ggplot(selected\_data, aes(x = Year\_Birth)) +

geom\_point(aes(y = NumWebPurchases), color = "blue", alpha = 0.5) + geom\_point(aes(y = NumStorePurchases), color = "red", alpha = 0.5) + labs(title = "Scatter Plot of Age vs. Purchases",

x = "Age",

y = "Number of Purchases") + theme\_minimal()

**#Line plot for Id vs. Web Purchases and Web Visits**

ggplot(selected\_data, aes(x = Id)) +

geom\_line(aes(y = NumWebVisitsMonth, color = "Web Visits")) + geom\_line(aes(y = NumWebPurchases, color = "Web Purchases")) + labs(title = "Line Plot of ID vs. Web Visits and Web Purchases",

x = "ID",

y = "Values") +

scale\_color\_manual(values = c("Web Visits" = "blue", "Web Purchases" = "green")) + theme\_minimal()

**#Box plot for Recency**

ggplot(selected\_data, aes(y = Recency)) + geom\_boxplot(fill = "skyblue", color = "black") + labs(title = "Box Plot of Recency",

y = "Recency") + theme\_minimal()

# Gain proficiency in Visualizing Marketing Data

## Gain proficiency in visualizing marketing data using R.

* 1. Understand the key elements of data visualization.
  2. Create various visualizations such as histograms, scatter plots, line plots, and bar charts using the

ggplot() function in R.

* 1. Apply appropriate visualization techniques to effectively communicate marketing insights.

### Theory:

**Key Elements of Data Visualization**

**Histogram:** Use a histogram to visualize the distribution of a single continuous variable.Helpful for understanding the shape, central tendency, and spread of data. Suitable for identifying patterns, skewness, and outliers in data.

**Boxplot (Box-and-Whisker plot):** Ideal for displaying the distribution of a numerical variable across different categories or group. Useful for comparing distributions and identifying outliers or variability between group.Shows key statistics like median, quartiles, and outliers.

**Scatter plot:** Use a scatter plot to visualize the relationship between two continuous variables Helpful for identifying correlations, trends, clusters, or patterns between variables. Suitable for assessing the strength and direction of relationships between variables.

**Interpretation and Implications:**

A majority of the customers who visit the store are educated till graduation level or are married.

From the scatter plot we know that the store purchases are higher than the web purchases. The recency of customer to a store to come back at the store is between 25 to 75 times and the average amount of web purchased are 2-8 items.

So if the company want to plan a sale if can target more on on store purchases rather than web purhcases.