Laxmi Charitable Trust's

Sheth L.U.J College of Arts & Sir M.V. College of Science and Commerce

Department of Information Technology (B.Sc.I.T Semester IV)

Data Analysis

Module-2

Practical-13

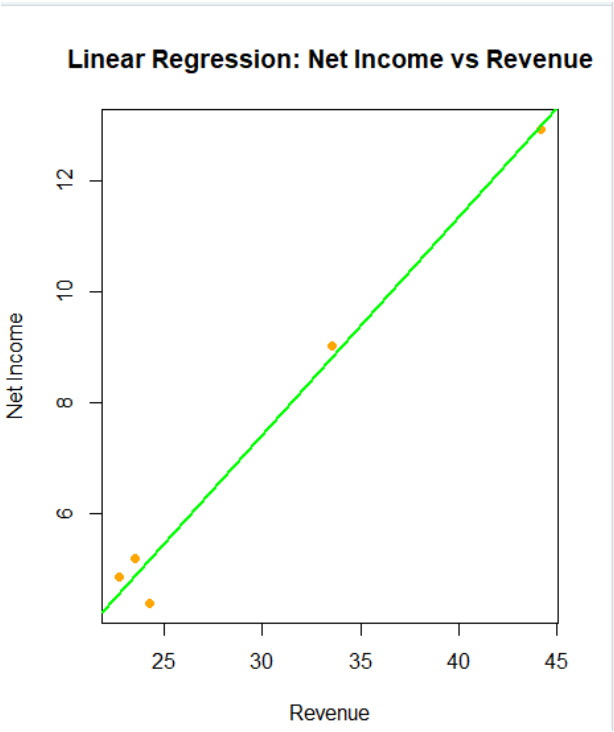
Roll No.: S018	Name: Radhika Mali
Class: SYIT	Batch: 1
Date of Assignment: 31-1-26	Date/Time of Submission: 31-1-26

Aim: Performing linear regression analysis using lm() (R).

Code:

```r
# Load data
qualcomm_df <- read.csv("qualcomm_data.csv", nrows = 5)

# Fit linear model
model <- lm(Net_Income ~ Revenue, data = qualcomm_df)

# Model summary
summary(model)

# Fix plotting margins
par(mar = c(4, 4, 2, 1))

# Scatter plot
plot(
  qualcomm_df$Revenue,
  qualcomm_df$Net_Income,
  main = "Linear Regression: Net Income vs Revenue",
  xlab = "Revenue",
  ylab = "Net Income",
  pch = 19,
  col = "orange"
)

# Regression line
abline(model, col = "green", lwd = 2)
8
```

Output:


Linear Regression: Net Income vs Revenue
Net Income
6
8
10
12
25
30
35
40
45
Revenue

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Practical-14

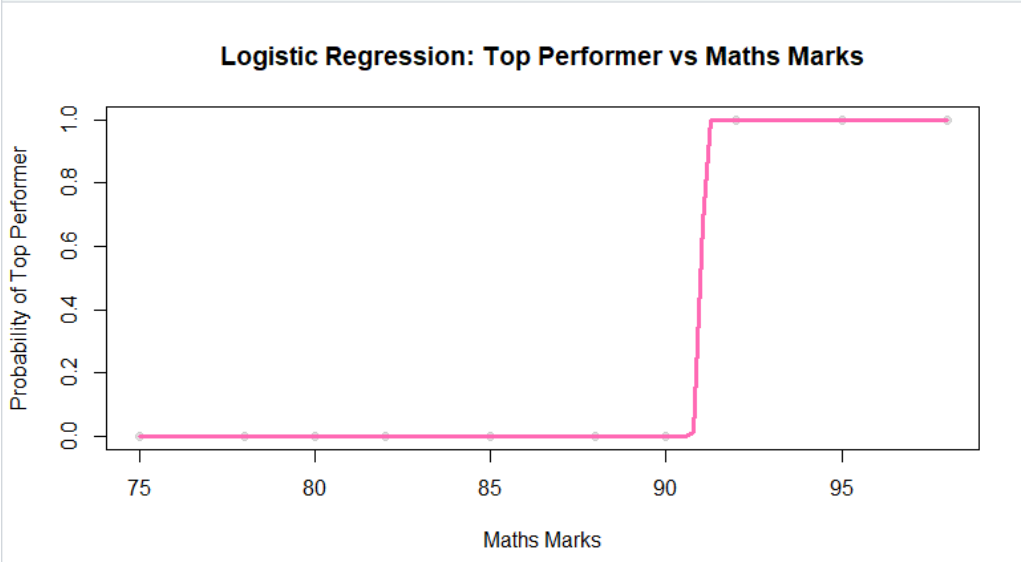
Roll No.: S018	Name: Radhika Mali
Class: SYIT	Batch: 1
Date of Assignment: 31-1-26	Date/Time of Submission: 31-1-26

Aim: Performing logistic regression using glm() (R).

Code:

```
# Creating dataset inside the code
jee_df <- data.frame(
  Maths_Marks = c(98, 95, 92, 90, 88, 85, 82, 80, 78, 75),
  Percentile  = c(99.8, 99.2, 98.5, 97.8, 96.9, 95.5, 94.2, 93.0, 91.5, 90.0)
)

# Creating binary target variable
jee_df$Top_Performer <- ifelse(jee_df$Percentile > 98, 1, 0)

# Logistic Regression Model
model <- glm(Top_Performer ~ Maths_Marks, family = binomial, data = jee_df)

# Model summary
summary(model)

# Scatter plot
plot(jee_df$Maths_Marks, jee_df$Top_Performer,
     main = "Logistic Regression: Top Performer vs Maths Marks",
     xlab = "Maths Marks",
     ylab = "Probability of Top Performer",
     col = rgb(0, 0, 0, 0.1),
     pch = 19)
# Prediction curve
x_values <- seq(min(jee_df$Maths_Marks), max(jee_df$Maths_Marks), length.out = 100)
predicted_probs <- predict(model, list(Maths_Marks = x_values), type = "response")

# Regression line
lines(x_values, predicted_probs, col = "hotpink", lwd = 3)
```

Output:


Logistic Regression: Top Performer vs Maths Marks
Probability of Top Performer
0.0
0.2
0.4
0.6
0.8
1.0
75
80
85
90
95
Maths Marks

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Module-2

Practical-15

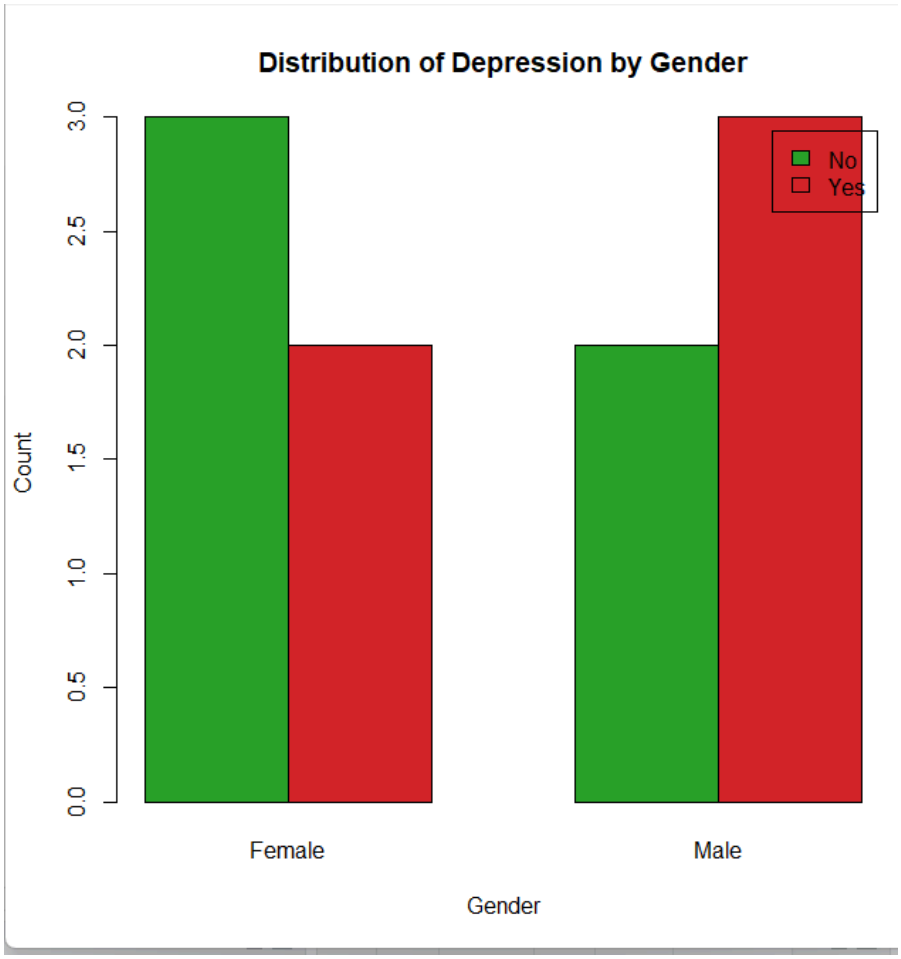
Roll No.: S018	Name: Radhika Mali
Class: SYIT	Batch: 1
Date of Assignment: 31-1-26	Date/Time of Submission: 31-1-26

Aim: Exporting results into external files (Excel, CSV, PDF) using write.csv() and writexl (R).

Code:

```
# Load required package
library(ggplot2)

# Step 1: Create sample data (agar df pehle se nahi hai)
df <- data.frame(
  Depression = c("Yes","No","Yes","No","Yes","No","Yes","No","Yes","No"),
  Gender = c("Male","Female","Female","Male","Male","Female","Female","Male","Male","Female")
)

# Step 2: Create frequency table
counts <- table(df$Depression, df$Gender)

# Step 3: Show barplot on screen
barplot(counts,
        main = "Distribution of Depression by Gender",
        xlab = "Gender",
        ylab = "Count",
        col = c("#2ca02c", "#d62728"),
        legend = rownames(counts),
        beside = TRUE)

# Step 4: Save same plot to PDF
pdf("graphical_report.pdf", width = 8, height = 6)

barplot(counts,
        main = "Distribution of Depression by Gender",
        xlab = "Gender",
        ylab = "Count",
        col = c("#2ca02c", "#d62728"),
        legend = rownames(counts),
        beside = TRUE)

dev.off()

print("Graph saved to graphical_report.pdf")
```

Output:


Distribution of Depression by Gender
Count
0.0
0.5
1.0
1.5
2.0
2.5
3.0
No
Yes
Female
Male
Gender