**Week 4:**

**24. Visualizations plot the histogram, bar chart and pie chart on sample data**

# Sample Data

data <- c(10, 20, 30, 40, 50)

# Histogram

hist(data, col = "blue", main = "Histogram", xlab = "Values", ylab = "Frequency")

# Bar Chart

barplot(data, col = "green", main = "Bar Chart", names.arg = c("A", "B", "C", "D", "E"))

# Pie Chart

pie(data, col = rainbow(length(data)), main = "Pie Chart")

**25. Regression model import a data from web storage**

# Import dataset from a URL (Example: CSV file from web)

url <- "https://raw.githubusercontent.com/mwaskom/seaborn-data/master/tips.csv"

data <- read.csv(url)

# View first few rows

head(data)

**26.Multiple regression model applies multiple regressions, if data have a continuous independent variable, apply on above dataset**

# Load package

library(datasets)

# Using built-in 'mtcars' dataset

data <- mtcars

# Multiple Linear Regression: Predict mpg using hp & wt

model <- lm(mpg ~ hp + wt, data = data)

# Summary of the model

summary(model)

**27.Regression model for predictions apply regression model techniques to predict the data on above dataset**

# Predict mpg based on new hp & wt values

new\_data <- data.frame(hp = c(110, 150), wt = c(2.5, 3.0))

predictions <- predict(model, new\_data)

# Print predictions

print(predictions)

**28. Install Package for Classification**

install.packages("e1071", dependencies = TRUE)

library(e1071)

**29. Choose Classifier for Classification**

data(iris)

# Split data into training & testing

set.seed(123)

index <- sample(1:nrow(iris), 0.7 \* nrow(iris))

train <- iris[index, ]

test <- iris[-index, ]

# Train Naive Bayes Classifier

model <- naiveBayes(Species ~ ., data = train)

# Predict on test data

predictions <- predict(model, test)

# Print confusion matrix

table(test$Species, predictions)

**30. Evaluate Performance of Classifier**

# Load necessary package

install.packages("caret", dependencies = TRUE)

# Compute Accuracy

conf\_matrix <- confusionMatrix(predictions, test$Species)

print(conf\_matrix)

**31. Get User Input & Perform Numerical Operations**

# Get user input

num1 <- as.numeric(readline(prompt = "Enter first number: "))

num2 <- as.numeric(readline(prompt = "Enter second number: "))

# Perform operations

print(paste("Max:", max(num1, num2)))

print(paste("Min:", min(num1, num2)))

print(paste("Average:", mean(c(num1, num2))))

print(paste("Sum:", sum(num1, num2)))

print(paste("Square Root of first number:", sqrt(num1)))

print(paste("Rounded value of second number:", round(num2)))

**Assessment-4: Create 3x3 Matrix and Calculate Row-wise & Column-wise Sums**

# Create 2x2 matrix with numbers from 1 to 9

mat <- matrix(1:4, nrow = 2, byrow = TRUE)

# Print matrix

print("Matrix:")

print(mat)

# Row-wise sum

row\_sums <- rowSums(mat)

print("Row-wise sum:")

print(row\_sums)

# Column-wise sum

col\_sums <- colSums(mat)

print("Column-wise sum:")

print(col\_sums)