6. Write a R Program to implement the control statements

{# Use ifelse to check if each element is positive, negative, or zero

numbers <- c(10, -5, 0, 8, -3)

result <- ifelse(numbers > 0, "Positive", ifelse(numbers < 0, "Negative", "Zero"))

# Print the original vector and the result

cat("Original numbers:", numbers, "\n")

cat("Result:", result, "\n")

}

{# Calculate the factorial of a number using a while loop

number <- 5

factorial\_result <- 1

cat("\nCalculating the factorial of", number, "using a while loop:\n")

while (number > 0) {

factorial\_result <- factorial\_result \* number

number <- number - 1

}

cat("Factorial:", factorial\_result, "\n")

}

{ # Use a for loop to calculate the sum

numbers <- c(5, 10, 15, 20, 25)

sum\_result <- 0

for (num in numbers) {

sum\_result <- sum\_result + num

}

# Print the original vector and the sum

cat("Original numbers:", numbers, "\n")

cat("Sum of numbers:", sum\_result, "\n")

}

7. Write a R program to create pie chart and bar chart of five subjects marks.

# Data for the subjects and their scores

subjects <- c("Math", "Science", "English", "History", "Art")

scores <- c(85, 90, 78, 88, 92)

# Plotting the pie chart

pie(

scores,

labels = subjects,

main = "Score Distribution (Pie Chart)",

col = rainbow(length(scores))

)

Plotting the bar chart

barplot(

scores,

names.arg = subjects,

main = "Score Distribution (Bar Chart)",

col = "skyblue",

ylim = c(0, 100),

ylab = "Scores"

)

8. Write a R program to implement different string manipulation functions.

{# Sample string

my\_string <- "Welcome! Computer Technology"

# 1. Convert to lowercase

lowercase\_string <- tolower(my\_string)

cat("1. Convert to lowercase:\n", lowercase\_string, "\n\n")

# 2. Convert to uppercase

uppercase\_string <- toupper(my\_string)

cat("2. Convert to uppercase:\n", uppercase\_string, "\n\n")

# 3. Count the number of characters

char\_count <- nchar(my\_string)

cat("3. Number of characters:", char\_count, "\n\n")

# 4. Extract substring

substring <- substr(my\_string, start = 10, stop = 28)

cat("4. Extract substring (from position 10 to 28):\n", substring, "\n\n")

# 5. Replace a substring

new\_string <- gsub("Computer", "Information", my\_string)

cat("5. Replace 'computer' with 'information':\n", new\_string, "\n\n")

# 6. Split the string into words

words <- strsplit(my\_string, " ")[[1]]

cat("6. Split the string into words:\n", words, "\n\n")

# 7. Concatenate strings

string1 <- "CT"

string2 <- "IT"

concatenated\_string <- paste(string1, string2)

cat("7. Concatenate strings:\n", concatenated\_string, "\n")

}