**Student: Seif Kungulio**

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**Subject: Project 3**

**Class: DSCI 502**

**Section: 01W**

**Instructor: Sean Yang**

**File Name: Project3\_Kungulio\_Seif.docx**

1. Read the data set in BlackFriday.xlsx into R. Call the loaded data BlackFriday.xlxs. Make sure that you have the directory set to the correct location for the data.

>

> # 1. Read the data set in BlackFriday.xlsx into R. Call the loaded data

> ## BlackFriday.xlxs. Make sure that you have the directory set to the

> ## correct location for the data.

>

> # Set the working directory to the correct location for the dataset.

> setwd("C:/Projects/DSCI 502/Week 3")

>

> # Import necessary libraries

> library(readxl)

>

> # Load the data from BlackFriday.xlsx

> BlackFriday.xlsx <- read\_excel("BlackFriday.xlsx")

>

> # Display the dimensions (rows and columns) of the dataframe

> dim(BlackFriday.xlsx)

[1] 10000 12

>

> # Verify the structure of the loaded data

> str(BlackFriday.xlsx)

tibble [10,000 × 12] (S3: tbl\_df/tbl/data.frame)

$ User\_ID : num [1:10000] 1e+06 1e+06 1e+06 1e+06 1e+06 ...

$ Product\_ID : chr [1:10000] "P00069042" "P00248942" "P00087842" "P00085442" ...

$ Gender : chr [1:10000] "F" "F" "F" "F" ...

$ Age : chr [1:10000] "0-17" "0-17" "0-17" "0-17" ...

$ Occupation : num [1:10000] 10 10 10 10 16 15 7 7 7 20 ...

$ City\_Category : chr [1:10000] "A" "A" "A" "A" ...

$ Stay\_In\_Current\_City\_Years: chr [1:10000] "2" "2" "2" "2" ...

$ Marital\_Status : num [1:10000] 0 0 0 0 0 0 1 1 1 1 ...

$ Product\_Category\_1 : num [1:10000] 3 1 12 12 8 1 1 1 1 8 ...

$ Product\_Category\_2 : num [1:10000] NA 6 NA 14 NA 2 8 15 16 NA ...

$ Product\_Category\_3 : num [1:10000] NA 14 NA NA NA NA 17 NA NA NA ...

$ Purchase : num [1:10000] 8370 15200 1422 1057 7969 ...

A computer screen shot of a black screen

Description automatically generated

1. Find the average of purchase amount using for loop.

>

> # 2. Find the average of purchase amount using for loop.

>

> # Initialize total purchase amount variable

> total <- 0

>

> # Get the number of rows in the dataset

> n <- nrow(BlackFriday.xlsx)

>

> # Loop through each row and sum the purchase amounts

> for (i in 1:n) {

+ total <- total + BlackFriday.xlsx$Purchase[i]

+ }

>

> # Compute the average purchase amount

> average\_purchase <- total / n

>

> # Print the rounded result

> print(round(average\_purchase), 2)

[1] 9152

>

A screenshot of a computer program

Description automatically generated

1. Find the average of purchase amount using while loop.

>

> # 3. Find the average of purchase amount using while loop.

>

> # Initialize total and counter variables

> total <- 0

> count <- 1

> n <- nrow(BlackFriday.xlsx)

>

> # Loop using while condition until all rows are processed

> while (count <= n) {

+ total <- total + BlackFriday.xlsx$Purchase[count]

+ count <- count + 1

+ }

>

> # Compute and print the rounded average purchase amount

> average\_purchase <- total / n

> print(round(average\_purchase, 2))

[1] 9152.49

>

A screenshot of a computer program

Description automatically generated

1. Find the average of purchase amount using repeat loop.

>

> # 4. Find the average of purchase amount using repeat loop.

>

> # Initialize total and counter variables

> total <- 0

> count <- 1

> n <- nrow(BlackFriday.xlsx)

>

> # Loop using repeat until manually broken

> repeat {

+ total <- total + BlackFriday.xlsx$Purchase[count]

+ count <- count + 1

+

+ # Break when count exceeds the number of rows

+ if (count > n) {

+ break

+ }

+ }

>

> # Compute and print the rounded average purchase amount

> average\_purchase <- total / n

> print(round(average\_purchase, 2))

[1] 9152.49

>

A screenshot of a computer program

Description automatically generated

1. Find the average of purchase amount for female shoppers using for loop.

>

> # 5. Find the average of purchase amount for female shoppers using for loop.

>

> # Extract the subset of data for female shoppers

> female\_purchases <- BlackFriday.xlsx[BlackFriday.xlsx$Gender == "F", ]

>

> # Initialize total purchase amount variable for females

> total <- 0

>

> # Get the number of female shoppers

> n <- nrow(female\_purchases)

>

> # Loop through female shoppers' purchases and sum them

> for (i in 1:n) {

+ total <- total + female\_purchases$Purchase[i]

+ }

>

> # Compute and print the rounded average purchase amount for female shoppers

> female\_avg <- total / n

> print(round(female\_avg, 2))

[1] 8550.2

>

A screenshot of a computer program

Description automatically generated

1. Find the average of purchase amount for female shoppers using while loop.

>

> # 6. Find the average of purchase amount for female shoppers using while loop.

>

> # Initialize total and counter variables

> total <- 0

> count <- 1

> n <- nrow(female\_purchases)

>

> # Loop using while condition until all female shoppers' purchases are summed

> while (count <= n) {

+ total <- total + female\_purchases$Purchase[count]

+ count <- count + 1

+ }

>

> # Compute and print the rounded average purchase amount for female shoppers

> female\_avg <- total / n

> print(round(female\_avg, 2))

[1] 8550.2

>

A screen shot of a computer

Description automatically generated

1. Find the average of purchase amount for female shoppers using repeat loop.

>

> # 7. Find the average of purchase amount for female shoppers using repeat loop.

>

> # Initialize total and counter variables

> total <- 0

> count <- 1

> n <- nrow(female\_purchases)

>

> # Loop using repeat until manually broken

> repeat {

+ total <- total + female\_purchases$Purchase[count]

+ count <- count + 1

+

+ # Break when count exceeds the number of female shoppers

+ if (count > n) {

+ break

+ }

+ }

>

> # Compute and print the rounded average purchase amount for female shoppers

> female\_avg <- total / n

> print(round(female\_avg, 2))

[1] 8550.2

>

A screenshot of a computer screen

Description automatically generated

1. Find the differences between the average of purchase amount for female and male shoppers.

>

> # 8. Find the differences between the average of purchase amount for female

> ## and male shoppers.

>

> # Extract the subset of data for male shoppers

> male\_purchases <- BlackFriday.xlsx[BlackFriday.xlsx$Gender == "M", ]

>

> # Initialize total purchase amount variable for males

> total <- 0

>

> # Get the number of male shoppers

> n <- nrow(male\_purchases)

>

> # Loop through male shoppers' purchases and sum them

> for (i in 1:n) {

+ total <- total + male\_purchases$Purchase[i]

+ }

>

> # Compute and print the rounded average purchase amount for male shoppers

> male\_avg <- total / n

> print(round(male\_avg, 2))

[1] 9338.95

>

> # Compute the difference between female and male average purchase amounts

> difference <- female\_avg - male\_avg

>

> # Print the absolute value of the difference (ensuring it's always positive)

> print(abs(round(difference, 2)))

[1] 788.75

>

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