Assignment

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1.) **Understanding of nuts and bolts of R:**

a. R program Structure

b. R Data Type, Command Syntax and Control Structures

c. File Operations in R

Ans.)The Input and Output of the given question in R program compiler will be:

a.) **R Program Structure**:

```
> # R Program Structure Example
>
> # 1. Expressions and Assignment
> x <- 5
> print(x)  # Output: [1] 5
[1] 5
>
> # 2. Comments
> # This is a comment. It won't be executed.
>
> # 3. Evaluation (Auto-printing)
> y <- 10
> y  # Output: [1] 10
[1] 10
>
> # 4. R Objects (Vectors)
> my_vector <- c(1, 2, 3, 4, 5)
> print(my_vector)  # Output: [1] 1 2 3 4 5
[1] 1 2 3 4 5
>
> # 5. Data Types
> a <- "Hello, World!"  # Character
> b <- 3.14  # Numeric (real number)
> c <- TRUE  # Logical (Boolean)
>
> # 6. Control Structures (if-else)
> if (c) {
+   print("It's true!")
+ } else {
+   print("It's false!")
+ }
[1] "It's true!"
>
> # 7. Loop Example (for loop)
> for (i in 1:5) {
+   print(paste("Iteration", i))
+ }
[1] "Iteration 1"
[1] "Iteration 2"
[1] "Iteration 3"
[1] "Iteration 4"
[1] "Iteration 5"
>
```

b.)R Data Type, Command Syntax and Control Structures

```
> > # Data Types and Variables
> x <- 10
> name <- "Ayandip Das 21BCE10364"
> is_done <- TRUE
>
> # Print Command
> print("Hello, World")
[1] "Hello, World"
>
> # Concatenation
> greeting <- "Hello"
> message <- paste(greeting, name, sep = ", ")
> print(message)
[1] "Hello, Ayandip Das 21BCE10364"
>
> # Control Structures
> if (x > 5) {
+   print("x is greater than 5")
+ } else {
+   print("x is less than or equal to 5")
+ }
[1] "x is greater than 5"
>
> # For Loop
> for (i in 1:5) {
+   print(i)
+ }
[1] 1
[1] 2
[1] 3
[1] 4
[1] 5
>
> # While Loop
> i <- 1
> while (i <= 5) {
+   print(i)
+   i <- i + 1
+ }
```

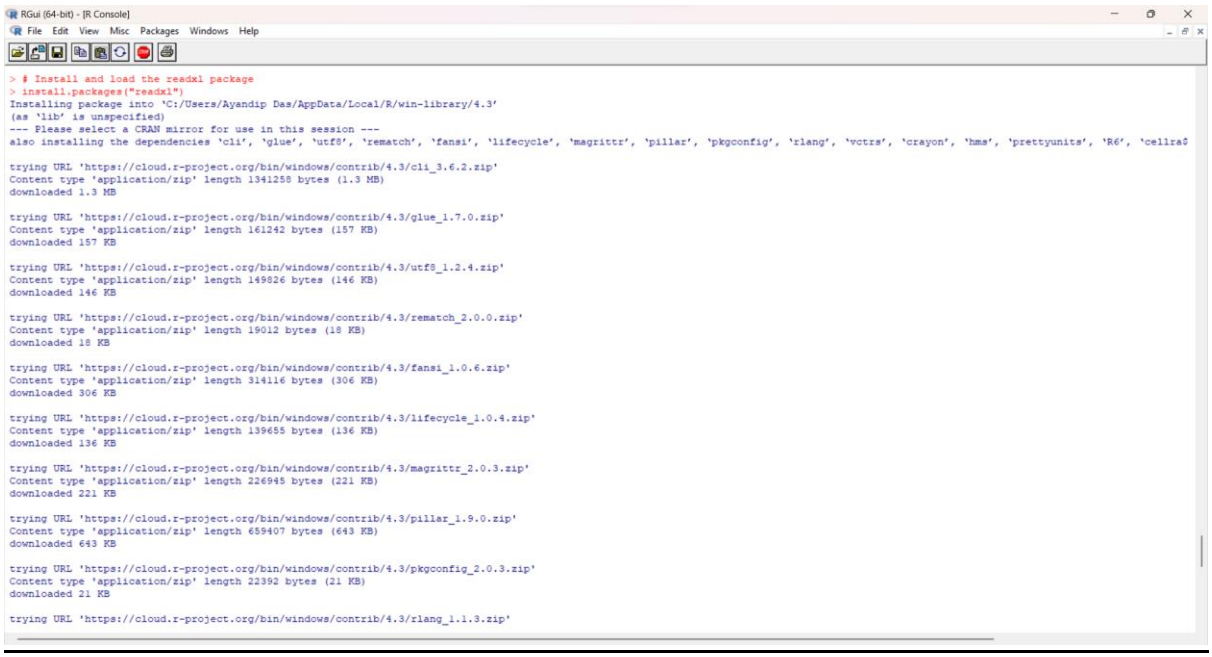
```
> # While Loop
> i <- 1
> while (i <= 5) {
+   print(i)
+   i <- i + 1
+ }
[1] 1
[1] 2
[1] 3
[1] 4
[1] 5
```

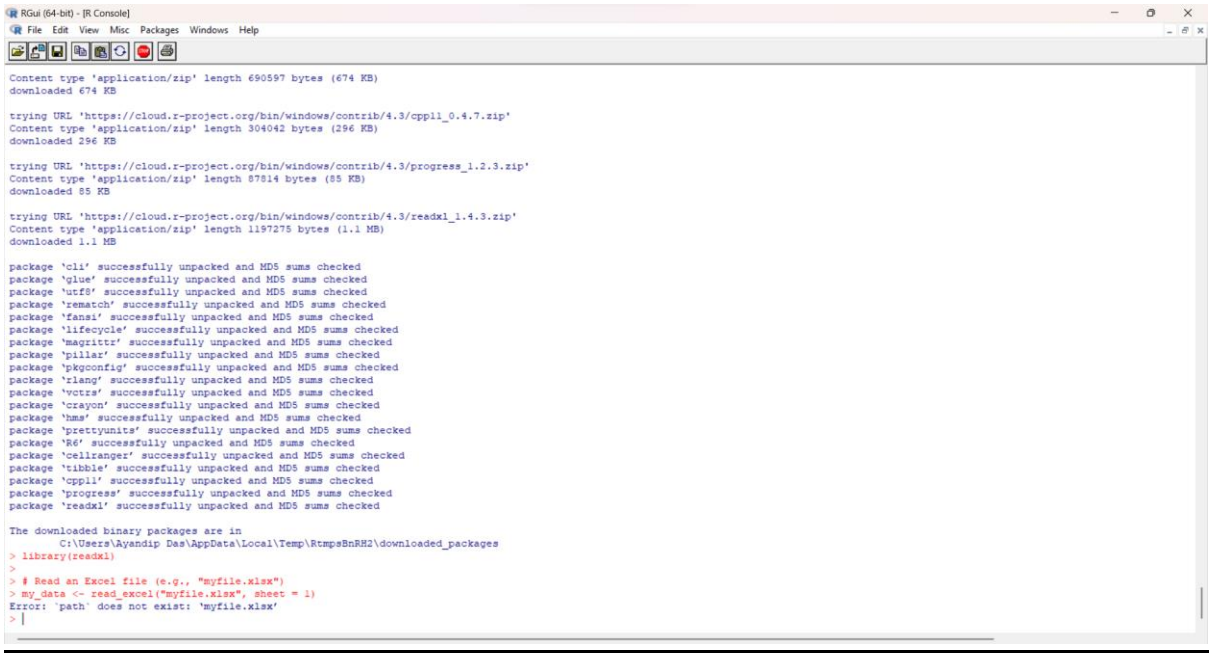
c.) File Operations in R

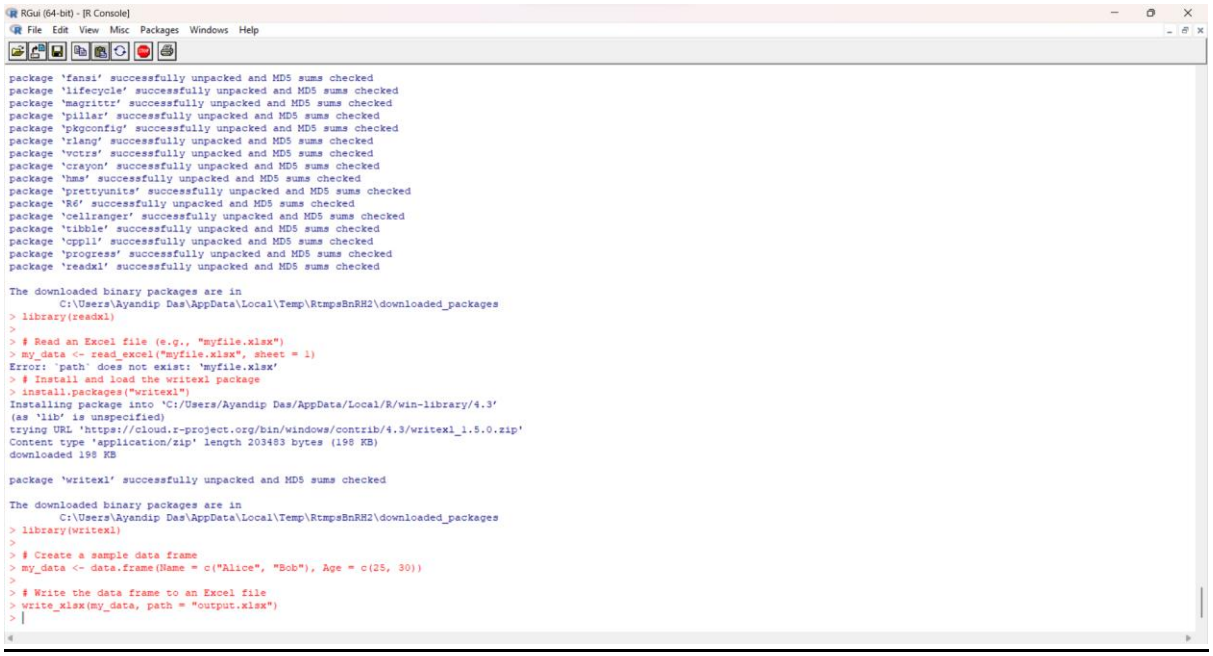
```
> # File Operations in R
>
> # 1. Creating a File
> file.create("my_file.txt")  # Creates a new file or truncates if it already exists
[1] TRUE
>
> # 2. Writing to a File
> data_to_write <- "Hello, World!\nThis is some text."
> writeLines(data_to_write, "my_file.txt")  # Write data to the file
>
> # 3. Renaming a File
> file.rename("my_file.txt", "new_file.txt")  # Renames the file
[1] TRUE
>
> # 4. Checking Existence of a File
> file_exists <- file.exists("new_file.txt")
> if (file_exists) {
+   print("The file exists.")
+ } else {
+   print("The file does not exist.")
+ }
[1] "The file exists."
>
> # 5. Reading Data from a File
> read_data <- readLines("new_file.txt")
> cat("Contents of the file:\n", read_data, sep = "\n")
Contents of the file:

Hello, World!
This is some text.
>
> # Clean up: Delete the file
> file.remove("new_file.txt")
[1] TRUE
>
```

2.) **Excel and R integration with R connector.**

Ans.) The Input and output of the given question using R Program Compiler will be:






RGui (64-bit) - [R Console]
File Edit View Misc Packages Windows Help
package 'fansi' successfully unpacked and MD5 sums checked
package 'lifecycle' successfully unpacked and MD5 sums checked
package 'magrittr' successfully unpacked and MD5 sums checked
package 'pillar' successfully unpacked and MD5 sums checked
package 'pkgconfig' successfully unpacked and MD5 sums checked
package 'rlang' successfully unpacked and MD5 sums checked
package 'vctrs' successfully unpacked and MD5 sums checked
package 'crayon' successfully unpacked and MD5 sums checked
package 'hms' successfully unpacked and MD5 sums checked
package 'prettyunits' successfully unpacked and MD5 sums checked
package 'R6' successfully unpacked and MD5 sums checked
package 'cellranger' successfully unpacked and MD5 sums checked
package 'tibble' successfully unpacked and MD5 sums checked
package 'cpp11' successfully unpacked and MD5 sums checked
package 'progress' successfully unpacked and MD5 sums checked
package 'readxl' successfully unpacked and MD5 sums checked
The downloaded binary packages are in
C:\Users\Ayandip Das\AppData\Local\Temp\RtmpsBnRH2\downloaded_packages
> library(readxl)
>
> # Read an Excel file (e.g., "myfile.xlsx")
> my_data <- read_excel("myfile.xlsx", sheet = 1)
Error: `path` does not exist: 'myfile.xlsx'
> # Install and load the writexl package
> install.packages("writexl")
Installing package into 'C:/Users/Ayandip Das/AppData/Local/R/win-library/4.3'
(as 'lib' is unspecified)
trying URL 'https://cloud.r-project.org/bin/windows/contrib/4.3/writexl_1.5.0.zip'
Content type 'application/zip' length 203483 bytes (198 KB)
downloaded 198 KB
package 'writexl' successfully unpacked and MD5 sums checked
The downloaded binary packages are in
C:\Users\Ayandip Das\AppData\Local\Temp\RtmpsBnRH2\downloaded_packages
> library(writexl)
>
> # Create a sample data frame
> my_data <- data.frame(Name = c("Alice", "Bob"), Age = c(25, 30))
>
> # Write the data frame to an Excel file
> write_xlsx(my_data, path = "output.xlsx")
>