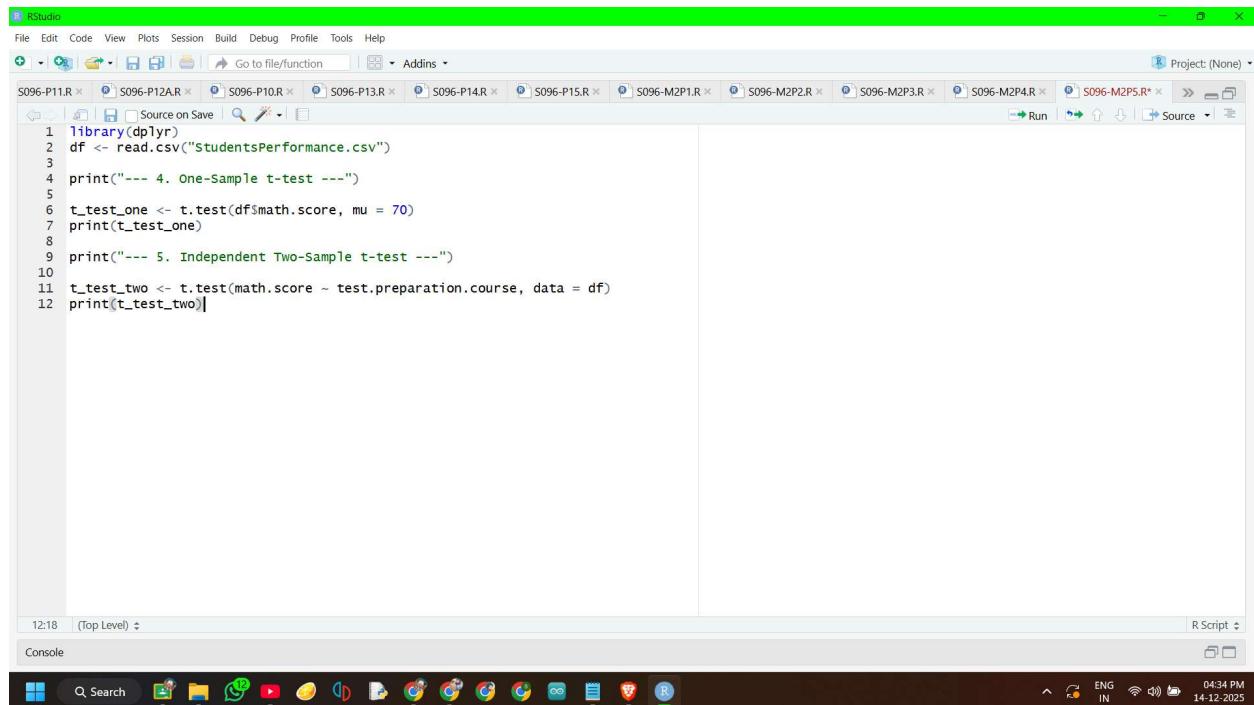


SHETH L.U.J. AND SIR M.V. COLLEGE
DATA ANALYSIS WITH R

AIM: Performing independent two-sample t-tests using `t.test()` with grouping.

CODE:

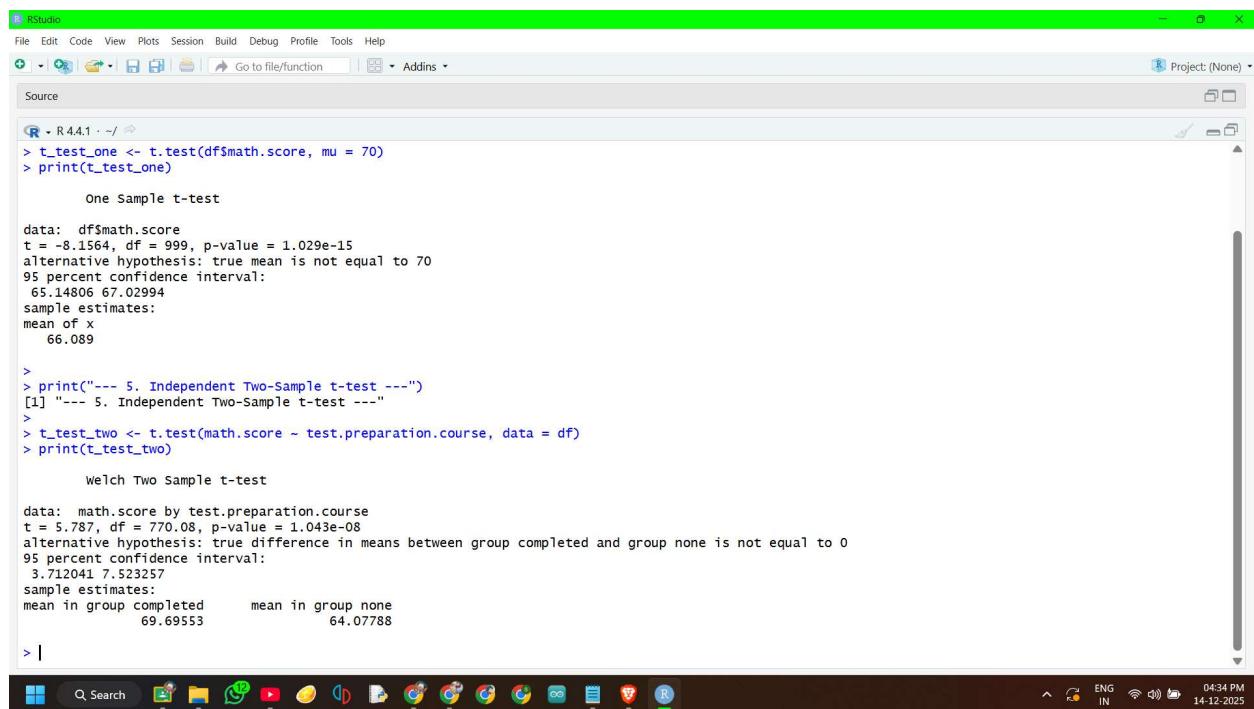


The screenshot shows the RStudio interface. The top menu bar includes File, Edit, Code, View, Plots, Session, Build, Debug, Profile, Tools, and Help. A toolbar below the menu contains icons for file operations like Open, Save, and Run. The main workspace shows the following R code:

```
library(dplyr)
df <- read.csv("StudentsPerformance.csv")
print("--- 4. One-Sample t-test ---")
t_test_one <- t.test(df$math.score, mu = 70)
print(t_test_one)
print("--- 5. Independent Two-Sample t-test ---")
t_test_two <- t.test(math.score ~ test.preparation.course, data = df)
print(t_test_two)
```

The code reads a CSV file named "StudentsPerformance.csv" and performs one-sample t-tests for the "math.score" column against a mean of 70. It also performs an independent two-sample t-test comparing "math.score" across different preparation courses. The output is displayed in the console tab at the bottom of the interface.

OUTPUT:



The screenshot shows the RStudio interface with the output tab selected. The output window displays the results of the t-tests run in the previous code block. The results for the one-sample t-test show a t-value of -8.1564 and a p-value of 1.029e-15, indicating a significant difference from the hypothesized mean of 70. The results for the independent two-sample t-test show a t-value of 5.787 and a p-value of 1.043e-08, indicating a significant difference between the groups based on preparation course.

```
R 4.4.1 · ~/ 
> t_test_one <- t.test(df$math.score, mu = 70)
> print(t_test_one)

One Sample t-test

data: df$math.score
t = -8.1564, df = 999, p-value = 1.029e-15
alternative hypothesis: true mean is not equal to 70
95 percent confidence interval:
65.14806 67.02994
sample estimates:
mean of x
66.089

> print("--- 5. Independent Two-Sample t-test ---")
[1] "--- 5. Independent Two-Sample t-test ---"
>
> t_test_two <- t.test(math.score ~ test.preparation.course, data = df)
> print(t_test_two)

Welch Two Sample t-test

data: math.score by test.preparation.course
t = 5.787, df = 770.08, p-value = 1.043e-08
alternative hypothesis: true difference in means between group completed and group none is not equal to 0
95 percent confidence interval:
3.712041 7.523257
sample estimates:
mean in group completed      mean in group none
69.69553                  64.07788

> |
```