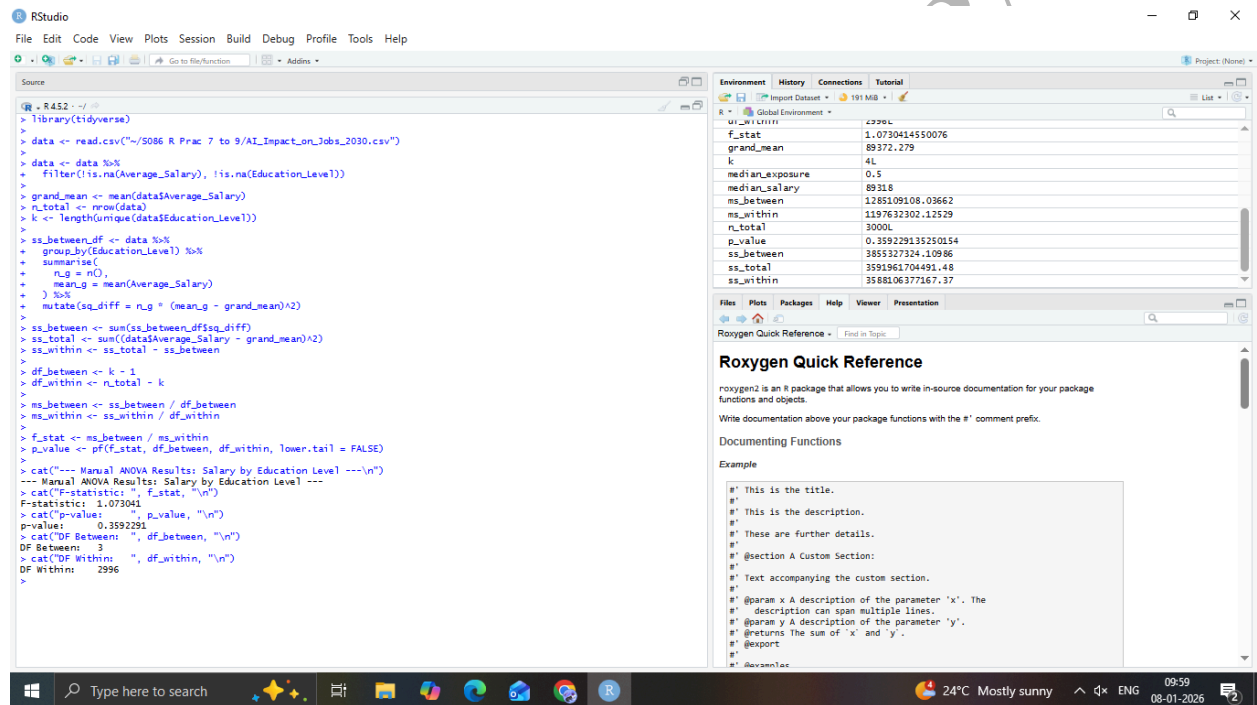


# SHETH L.U.J AND SIR M.V. COLLEGE

SUBJECT NAME: data analysis

## PRACTICAL 7

AIM: Performing one-way ANOVA using aov() (R).



The screenshot displays the RStudio interface. The Source pane on the left contains R code for performing a one-way ANOVA using the 'aov()' function. The code includes steps for loading the 'tidyverse' library, reading a CSV file, filtering out NA values, calculating grand means, and performing the ANOVA. The Environment pane on the right shows the variables created during the process, including 'f\_stat', 'grand\_mean', 'k', 'median\_exposure', 'median\_salary', 'ms\_between', 'ms\_within', 'n\_total', 'p\_value', 'ss\_between', 'ss\_total', and 'ss\_within'. The bottom pane shows the 'Roxygen Quick Reference' documentation.

```
R - R432 - / -  
File Edit Code View Plots Session Build Debug Profile Tools Help  
Source  
R - R432 - / -  
library(tidyverse)  
data <- read.csv("~/S086 R Prac 7 to 9/AI_Impact_on_Jobs_2030.csv")  
data <- data %>%  
  filter(!is.na(Average_Salary), !is.na(Education_Level))  
grand_mean <- mean(data$Average_Salary)  
n_total <- nrow(data)  
k <- length(unique(data$Education_Level))  
ss_between_df <- data %>%  
  group_by(Education_Level) %>%  
  summarise(  
    n_g = n(),  
    mean_g = mean(Average_Salary)  
  ) %>%  
  mutate(sq_diff = n_g * (mean_g - grand_mean)^2)  
ss_between <- sum(ss_between_df$sq_diff)  
ss_total <- sum((data$Average_Salary - grand_mean)^2)  
ss_within <- ss_total - ss_between  
df_between <- k - 1  
df_within <- n_total - k  
ms_between <- ss_between / df_between  
ms_within <- ss_within / df_within  
f_stat <- ms_between / ms_within  
p_value <- pf(f_stat, df_between, df_within, lower.tail = FALSE)  
cat("--- Manual ANOVA Results: Salary by Education Level ---\n")  
cat("F-statistic: ", f_stat, "\n")  
cat("p-value: ", p_value, "\n")  
pvalue <- 0.3592291  
cat("DF Between: ", df_between, "\n")  
DF_Between <- 3  
cat("DF Within: ", df_within, "\n")  
DF_Within <- 2996  
>  
Environment History Connections Tutorial  
R - Global Environment * 191 MB *  
f_stat 1.0730414550076  
grand_mean 89372.279  
k 4L  
median_exposure 0.5  
median_salary 89318  
ms_between 1285109108.03662  
ms_within 1197632302.12529  
n_total 3000L  
p_value 0.359229135350154  
ss_between 3855327324.10986  
ss_total 3591961704493.48  
ss_within 3588106377167.37  
Files Plots Packages Help Viewer Presentation  
Roxygen Quick Reference - Find in Topic  
Roxygen Quick Reference  
roxygen2 is an R package that allows you to write in-source documentation for your package functions and objects.  
Write documentation above your package functions with the '#' comment prefix.  
Documenting Functions  
Example  
#' This is the title.  
#'  
#' This is the description.  
#'  
#' These are further details.  
#'  
#' @section A Custom Section:  
#'  
#' Text accompanying the custom section.  
#'  
#' @param x A description of the parameter 'x'. The  
#' description can span multiple lines.  
#' @param y A description of the parameter 'y'.  
#' @returns The sum of 'x' and 'y'.  
#' @export  
#'  
#'
```

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S086

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