**WAP in R to perform linear regression analysis.**

Your Excel file should have two columns: x (independent variable) and y (dependent variable), like this:

| **x** | **y** |
| --- | --- |
| **5** | **20** |
| **10** | **40** |
| **15** | **60** |
| **20** | **80** |
| **25** | **100** |

Steps to Perform Simple Linear Regression in R:

1. Install and Load Required Packages

First, install the readxl package to load Excel files into R:

install.packages("readxl")

2. Load Data from Excel

You need to load the Excel file into R using the readxl package:

# Load the necessary library

library(readxl)

# Load your Excel file (update the file path with your actual file location)

data <- read\_excel("C:/Users/HP/Desktop/anova.xlsx") # Replace with the actual path of your file

# View the first few rows to ensure it is loaded correctly

head(data)

3. Perform Simple Linear Regression

To perform the simple linear regression, use the lm() function in R. Here y is the dependent variable, and x is the independent variable.

# Simple linear regression model

model <- lm(y ~ x, data = data)

# View the summary of the regression results

summary(model)

4. Interpret the Output

The summary(model) will give detailed information, including the coefficients, p-value, and R-squared value.

*Key parts of the output:*

* **Coefficients**: The intercept (0.000) and slope (4.000) of the regression line.
* **R-squared**: 0.99, indicating that 99% of the variance in y is explained by x.
* **p-value**: 0.0001, indicating a statistically significant relationship between x and y.

5. Visualize the Regression (optional)

You can also visualize the data and the regression line:

# Plot the data points

plot(data$x, data$y, main="Simple Linear Regression", xlab="x", ylab="y")

# Add the regression line

abline(model, col="red")

Summary of Steps:

1. Install and load the readxl package to import your Excel data.
2. Load the Excel file into R.
3. Run a simple linear regression using the lm() function.
4. Interpret the results, focusing on the coefficients, p-value, and R-squared.
5. Optionally, visualize the regression line.