WAP of 1 WAY ANOVA in R

**Problem Example:** Y is independent and X is dependent variable.

**Research Question:** Does the X is significantly affected by the Y variable?

> install.packages("openxlsx")

> library(openxlsx)

> data <- read.xlsx("C:/Users/HP/Desktop/anova.xlsx")

> # Display the first few rows of the dataset

> head(data)

x y

1 4 5

2 6 2

3 7 4

4 8 3

5 9 22

> # Check the structure of the data

> str(data)

'data.frame': 5 obs. of 2 variables:

$ x: num 4 6 7 8 9

$ y: num 5 2 4 3 22

> # Perform one-way ANOVA

> anova\_result <- aov(y ~ x, data = data)

> # View the summary of the ANOVA

> summary(anova\_result)

**Output:**

Df Sum Sq Mean Sq F value Pr(>F)

x 1 93.5 93.50 1.514 0.306

Residuals 3 185.3 61.77

WAP of 2 WAY ANOVA in R

**Problem Example:**

We want to study the effect of **exercise type** and **diet type** on **weight loss** in individuals. We conduct a study where we assign participants to two different exercise types (Exercise A and Exercise B) and two different diet plans (Diet X and Diet Y). After 4 weeks, we measure their weight loss (in kilograms).

**Research Question:**

Does the **exercise type** or **diet type** (or their interaction) significantly affect weight loss?

**Factors:**

1. **Exercise Type (Factor 1)**:
   * Exercise A
   * Exercise B
2. **Diet Type (Factor 2)**:
   * Diet X
   * Diet Y

**Dependent Variable:**

* **Weight Loss (Outcome)**: The weight loss in kilograms after 4 weeks.

**Data Example (Excel Layout):**

| **Exercise Type** | **Diet Type** | **Weight Loss (kg)** |
| --- | --- | --- |
| A | X | 3.5 |
| A | X | 4.2 |
| A | Y | 2.8 |
| A | Y | 3.1 |
| B | X | 5.3 |
| B | X | 4.9 |
| B | Y | 3.7 |
| B | Y | 3.9 |