

PRACTICAL NO 7 (M2)

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

OUTPUT :

The screenshot shows the RStudio interface with the following components:

- Script Editor:** Contains R code for loading the 'Indian Liver Patient Dataset (ILPD)', defining column names, creating a factor for gender, and performing a one-way ANOVA using the `aov()` function.
- Environment:** Lists loaded datasets including `crop_yield`, `df`, `diabetes`, `diabetes_prediction_india`, `indian_liver_patient_data`, `liver`, `t_test_one`, `t_test_paird`, and `t_test_two`.
- Console:** Displays the output of the ANOVA test, showing the sum of squares, degrees of freedom, mean squares, F-value, and p-value for the 'Gender' factor.
- Files:** A file explorer showing various project files and folders.

```
1 liver <- read.csv("Sqlite3/Indian Liver Patient dataset (ILPD).csv", header = FALSE)
2
3 colnames(liver) <- c("Age", "Gender", "Total_Bilirubin",
4 "Direct_Bilirubin", "Alkaline_Phosphotase",
5 "Alanine_Aminotransferase",
6 "Aspartate_Aminotransferase",
7 "Total_Proteins", "Albumin",
8 "Albumin_Globulin_Ratio", "Liver_Disease")
9
10 liver$Gender <- factor(liver$Gender)
11
12 anova_liver <- aov(total_bilirubin ~ Gender, data = liver)
13 summary(anova_liver)
14
15
```

```
> liver <- read.csv("Sqlite3/Indian Liver Patient dataset (ILPD).csv", header = FALSE)
>
> colnames(liver) <- c("Age", "Gender", "Total_Bilirubin",
+ "Direct_Bilirubin", "Alkaline_Phosphotase",
+ "Alanine_Aminotransferase",
+ "Aspartate_Aminotransferase",
+ "Total_Proteins", "Albumin",
+ "Albumin_Globulin_Ratio", "Liver_Disease")
>
> liver$Gender <- factor(liver$Gender)
>
> anova_liver <- aov(total_bilirubin ~ Gender, data = liver)
> summary(anova_liver)
          Df Sum Sq Mean Sq F value Pr(>F)
Gender    1  179.178  179.178    4.669 0.0331 *
Residuals 581 22262    38.32
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

>
```

Gender	Df	Sum Sq	Mean Sq	F value	Pr(>F)
1	1	179.178	179.178	4.669	0.0331 *
Residuals	581	22262	38.32		

PRACTICAL NO 8 (M2)

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

OUTPUT :

```

1 agr1 <- read.csv("sqllite3/crop_yield.csv")
2
3 agr1$season <- factor(agr1$season)
4 agr1$state <- factor(agr1$state)
5
6 anova_agri <- aov(yield ~ season * state, data = agr1)
7
8 summary(anova_agri)

```

Console Output:

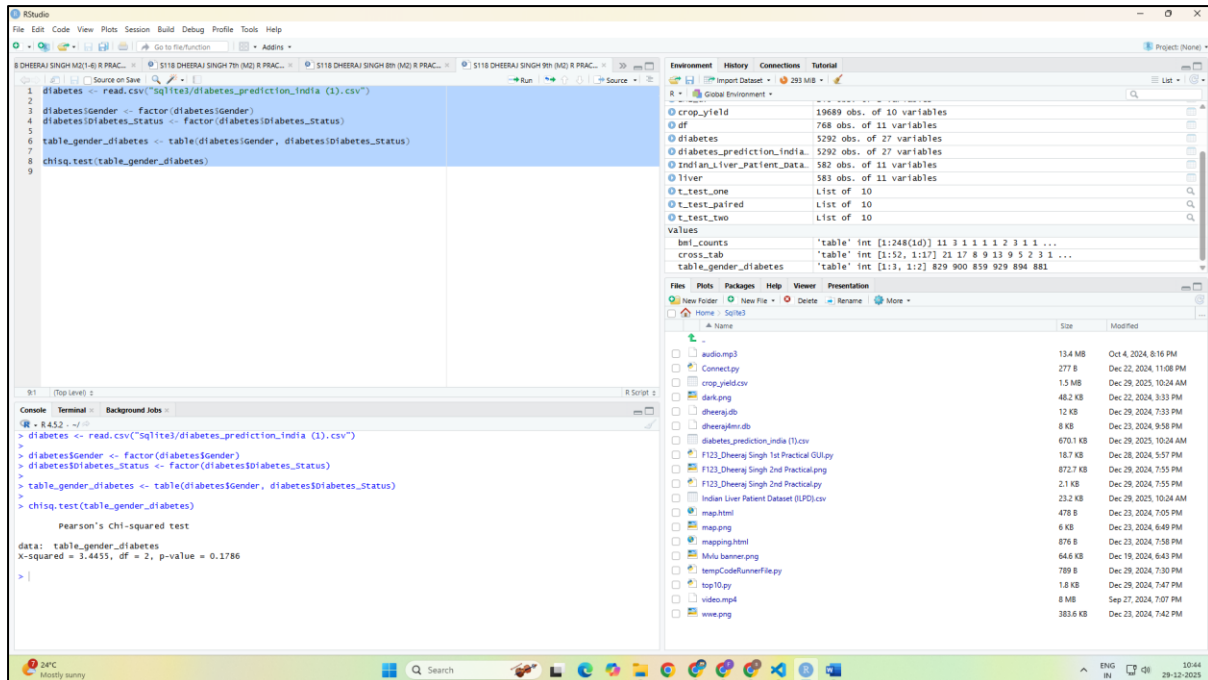
```

> agr1 <- read.csv("sqllite3/crop_yield.csv")
> agr1$season <- factor(agr1$season)
> agr1$state <- factor(agr1$state)
> anova_agri <- aov(yield ~ season * state, data = agr1)
> summary(anova_agri)
          Df Sum Sq Mean Sq F value Pr(>F)
Season      5  5.082e+08 101645533 150.87 <2e-16 ***
State      19  2.099e+08  7399264  10.74 <2e-16 ***
Season:State 96  1.293e+09 13464124  19.98 <2e-16 ***
Residuals 19558  1.318e+10  673741
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

```

The screenshot also shows the Environment pane with the following objects:

- anova_agri: Large aov (13 elements, 29.4 MB)
- anova_liver: List of 13
- bmi_df: 248 obs. of 2 variables
- crop_yield: 19689 obs. of 10 variables
- df: 768 obs. of 11 variables
- diabetes: 5292 obs. of 27 variables
- diabetes_prediction_india: 5292 obs. of 27 variables
- Indian_Liver_Patient_data: 582 obs. of 11 variables
- liver: 583 obs. of 11 variables
- t_test_jone: List of 10
- t_test_paired: List of 10
- t_test_two: List of 10

PRACTICAL 9 (M2)AIM : Conducting Chi-square tests using `chisq.test()` (R)**OUTPUT :**

```
1 diabetes <- read.csv("sqlite3/diabetes_prediction_india (1).csv")
2 diabetes$gender <- factor(diabetes$gender)
3 diabetes$diabetes_status <- factor(diabetes$diabetes_status)
4 table_gender_diabetes <- table(diabetes$gender, diabetes$diabetes_status)
5
6
7 chisq.test(table_gender_diabetes)
8
9
```

Pearson's Chi-squared test

data: table_gender_diabetes

X-squared = 3.4455, df = 2, p-value = 0.1786

Environment

Object	Class	Attributes
diabetes	data.frame	19689 obs. of 10 variables
df	data.frame	768 obs. of 11 variables
diabetes	data.frame	5292 obs. of 27 variables
diabetes_prediction_india	data.frame	5292 obs. of 27 variables
indian_liver_patient_data	data.frame	582 obs. of 11 variables
t_test_one	list	list of 10
t_test_two	list	list of 10
t_test_three	list	list of 10
table_gender_diabetes	table	table int [1:2, 1:2] 829 900 859 929 894 881