**ANOVA REPORT**

1. The problem is to identify whether there is any significant difference between the subject marks.

|  |  |  |  |
| --- | --- | --- | --- |
| Student/Subject Marks | Chemistry | Physics | Maths |
| Adrien | 99 | 91 | 99 |
| Sharath | 97 | 96 | 99 |
| Balaji | 89 | 87 | 98 |
| Arun | 78 | 77 | 79 |

Accept the null hypothesis if the calculated value is less than the table value for eg:5

**One- way Classification for above table(Only Column-Wise)**

H0: There is no significant difference between the marks

H1: There is significant difference between the marks

**Suppose calculated value is 3.5 which is less than 5 then accept null hypothesis.**

1. a) The problem is to identify whether there is any significant difference between the each student with respect to the subject marks.

**Two- way Classification for above table(Both column & Row wise)**

H0: There is no significant difference between each students mark

H1: There is significant difference between each students mark

**Suppose calculated value is 5.5 which is greater than 5 the reject the null hypothesis**

2. Identify whether there is any significant difference in the rainfall level of three states

|  |  |  |  |
| --- | --- | --- | --- |
| States/Rainfall level | 2021 | 2022 | 2023 |
| AP | 90 | 91 | 80 |
| MP | 60 | 90 | 100 |
| Assam | 89 | 87 | 98 |
| Delhi | 78 | 77 | 79 |

Accept the null hypothesis if the calculated value is less than the table value for eg:0.05

**One- way Classification for above table(Only Column-Wise)**

H0: There is no significant difference between the rainfall level

H1: There is significant difference between the rainfall level

**Suppose calculated value is 3 which is less than 5 then accept null hypothesis.**

2 a) The problem is to identify whether there is any significant difference between the rainfall level in each state.

**Two- way Classification for above table(Both column & Row wise)**

H0: There is no significant difference between the rainfall level in each state

H1: There is significant difference between the rainfall level in each state

**Suppose calculated value is 2.5 which is less than 5 then accept the null hypothesis**

3.Determining difference in quality of service among different branches of a Hotel

|  |  |  |  |
| --- | --- | --- | --- |
| Branches/Service ratings | On-time | Hygeine | Taste |
| Coimbatore North | 9 | 9 | 8 |
| Coimbatore South | 6 | 9 | 10 |
| Madurai | 8 | 8 | 9 |
| tiruppur | 7 | 7 | 7 |

Accept the null hypothesis if the calculated value is less than the table value for eg:0.05

**One- way Classification for above table (Only Column-Wise)**

H0: There is no significant difference between the quality of service offered

H1: There is significant difference between the quality of service offered

**Suppose calculated value is 7.5 which is greater than 5 then reject null hypothesis and accept alternate hypothesis.**

3. a) Determining difference in quality of service of each branchof a Hotel

**Two- way Classification for above table (Both column & Row wise)**

H0: There is no significant difference between the quality of service offered in each branch

H1: There is significant difference between the quality of service offered in each branch

**Suppose calculated value is 2.5 which is less than 5 the accept the null hypothesis**

**Problem Statement with python code:**

Identify whether significant impact on salary with respect to percentage of given marks.

**ssc\_p**

H0: There is no significant difference or impact salary with respect to ssc percentage

H1: There is no significant difference or impact salary with respect to ssc percentage

**hsc\_p**

H0: There is no significant difference or impact salary with respect to hsc percentage

H1: There is no significant difference or impact salary with respect to hsc percentage

**degree\_p**

H0: There is no significant difference or impact salary with respect to degree percentage

H1: There is no significant difference or impact salary with respect to degree percentage

**ssc\_p:hsc\_p**

H0: There is no significant difference or impact salary with respect to interaction between ssc and hsc percentage

H1: There is no significant difference or impact salary with respect to interaction between ssc and hsc percentage

**ssc\_p:degree\_p**

H0: There is no significant difference or impact salary with respect to interaction between ssc and degree percentage

H1: There is no significant difference or impact salary with respect to interaction between ssc and degree percentage

**hsc\_p:degree\_p**

H0: There is no significant difference or impact salary with respect to interaction between hsc and degree percentage

H1: There is no significant difference or impact salary with respect to interaction between hsc and degree percentage

**ssc\_p:hsc\_p:degree\_p**

H0: There is no significant difference or impact salary with respect to interaction between ssc,hsc and percentage

H1: There is no significant difference or impact salary with respect to interaction between ssc,hsc and percentage

**Result:**

**df sum\_sq mean\_sq F PR(>F)**

**ssc\_p 1.0 1.507904e+12 1.507904e+12 105.632797 2.766450e-20**

**hsc\_p 1.0 1.957342e+11 1.957342e+11 13.711722 2.733315e-04**

**degree\_p 1.0 5.274203e+10 5.274203e+10 3.694724 5.595769e-02**

**ssc\_p:hsc\_p 1.0 5.048863e+10 5.048863e+10 3.536868 6.142285e-02**

**ssc\_p:degree\_p 1.0 4.060119e+10 4.060119e+10 2.844225 9.320930e-02**

**hsc\_p:degree\_p 1.0 2.284924e+10 2.284924e+10 1.600652 2.072332e-01**

**ssc\_p:hsc\_p:degree\_p 1.0 9.420497e+09 9.420497e+09 0.659932 4.175173e-01**

**Residual 207.0 2.954916e+12 1.427496e+10 NaN NaN**

**ssc\_p**

**PR >0.05 that is 2.7>0.05 so accept null hypothesis**

H0: There is no significant difference or impact on salary with respect to ssc percentage

**hsc\_p**

**PR >0.05 that is 2.7>0.05 so accept null hypothesis**

H0: There is no significant difference or impact on salary with respect to hsc percentage

**degree\_p**

**PR >0.05 that is 5.5>0.05 so accept null hypothesis**

H0: There is no significant difference or impact on salary with respect to degree percentage

**ssc\_p:hsc\_p**

**PR >0.05 that is 6.1>0.05 so accept null hypothesis**

H0: There is no significant difference or impact salary with respect to interaction between ssc and hsc percentage

**ssc\_p:degree\_p**

**PR >0.05 that is 9.3>0.05 so accept null hypothesis**

H0: There is no significant difference or impact salary with respect to interaction between ssc and degree percentage

**hsc\_p:degree\_p**

**PR >0.05 that is 2.07>0.05 so accept null hypothesis**

H0: There is no significant difference or impact salary with respect to interaction between hsc and degree percentage

**ssc\_p:hsc\_p:degree\_p**

**PR >0.05 that is 4.1>0.05 so accept null hypothesis**

H0: There is no significant difference or impact salary with respect to interaction between ssc,hsc and degree percentage