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/Users/bps/PycharmProjects/regression_anova/venv/bin/python /Users/bps/PycharmProjects/regression_anova/main
.py
Welcome to Regression,Correlation, Anova Calculator by AG

1.Regression
2.Correlation
3.One Way Anova
4.Two Way Anova
4


4.Two Way Anova

Enter the no of Treatments: 4
Enter the no of Blocks: 3
Level of significance: 0.01

Enter the Data

45 43 51
47 46 52
48 50 55
42 37 49

a (No of Treatments) = 4
b (No of Blocks) = 3
a*b (Total no of Samples) = 12

Ti. = [139. 145. 153. 128.]
T.j = [182. 176. 207.]
ΣΣ yij^2 = 26867.0
C (T..^2 / a*b) = 26602.08333
```

```
SS(Tr) = 110.91667
SS(Bl) = 135.16667
SSE = 18.83333
SST = 264.91667


MS(Tr) (SS(Tr)/(a-1)) = 36.97222
MS(Bl) (SS(Bl)/(b-1)) = 67.58334
MSE (SSE/(a-1)*(b-1)) = 3.13889


F_Tr (MS(Tr)/MSE) = 11.779
F_Bl (MS(Bl)/MSE) = 21.531
```

Source of variation	Degree of freedom	Sum of square	Mean square	F
Treatments	a-1 = 3	SS(Tr) = 110.91667	MS(Tr) = 36.97222	11.779
Blocks	b-1 = 2	SS(Tr) = 135.16667	MS(Tr) = 67.58334	21.531
Error	(a-1)(b-1) = 6	SSE = 18.83333	MSE = 3.13889	
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Total	ab-1 = 11	SST = 264.91667		

Treatments Testing
Testing $\alpha1 \neq \alpha2 \neq \alpha3 \neq \alpha4 \neq 0$ the alternative Hypothesis to test with null $\alpha1 = \alpha2 = \alpha3 = \alpha4 = 0$
The null $\alpha1 = \alpha2 = \alpha3 = \alpha4 = 0$ must be rejected if F>9.7795

Calculations

F(Tr) = 11.779

Decision

Null $\alpha_1=\alpha_2=\alpha_3=\alpha_4=0$ must be Rejected at level of significance 0.01 and Accept $\alpha_1\neq\alpha_2\neq\alpha_3\neq\alpha_4\neq0$

Blocks Testing
Testing $\beta_1\neq\beta_2\neq\beta_3\neq0$ the alternative Hypothesis to test with null $\beta_1=\beta_2=\beta_3=0$
The null $\beta_1=\beta_2=\beta_3=0$ must be rejected if F>10.9248

Calculations

F(Bl) = 21.531

Decision

Null $\beta_1=\beta_2=\beta_3=0$ must be Rejected at level of significance 0.01 and Accept $\beta_1\neq\beta_2\neq\beta_3\neq0$

Process finished with exit code 0