S1
Q 1
Q 2
Q 3
Q 4
Q 5
Q 6
Q 7
Q 8
Q 9

This contest is running in practice mode and the submissions will not affect the scoreboard.

S1 **Default Section** (9 Questions)

#	QUESTION	TYPE	SCORE	STATUS	ACTION
1	Advertising Campaigns	Objective	75	Answered	Submitted
2	Four machines	Objective	50	Answered	Submitted
3	Marathon Race time	Objective	75	Answered	Submitted
4	IQ test	Objective	50	Answered	Submitted
5	Error Rate	Objective	50	Answered	Submitted
6	p-value	Objective	25	Answered	Submitted
7	Highway mileage	Objective	50	Answered	Submitted
8	New Flagship Product	Objective	25	Answered	Submitted
9	New Feature Quarter	Objective	50	Answered	Submitted

S1 Default Section

Q1 > Q2 > Q3 > Q4 > Q5 > Q6 > Q7 > Q8 > Q9

S1

Q 1

Q 2

Q 3

Q 4

Q 5

Q 6

Q 7

Q 8

Q 9

Advertising Campaigns

Flag Question

In a randomized controlled trial, you are comparing the effectiveness of two different advertising campaigns (A and B) in increasing sales. You collect data on sales from two groups: one exposed to campaign A and the other to campaign B. Which of the following statistical tests is most appropriate for comparing the mean sales between the two groups?

HINTS | Complete Solution

- Chi-squared test
- **Independent samples t-test**
- Pearson correlation
- Paired samples t-test

Your answer to this question has been recorded. It will be evaluated after the end of the contest. If you change your answer, kindly re-submit.

Re-Submit

S1 Default Section

Q1 > Q2 > Q3 > Q4 > Q5 > Q6 > Q7 > Q8 > Q9

S1

Q 1

Q 2

Q 3

Q 4

Q 5

Q 6

Q 7

Q 8

Q 9

Four machines

Flag Question

Suppose there a four machines m1, m2, m3, and m4 in a factory that is used to produce a certain kind of cotton fabric.

Samples of size 4 with each unit having 100sq. meters are selected from the **output** of the machine randomly, and the number of **flaws** in every 100 sq. meters is counted and listed below.

M1	M2	M3	M4
8	6	14	20
9	8	12	22
11	10	18	25
12	4	9	23

```
m1 = [8, 9, 11, 12]
m2 = [6, 8, 10, 4]
m3 = [14, 12, 18, 9]
m4 = [20, 22, 25, 23]
```

Do you think there is a **significant difference** in the performance of the four machines?

Check whether there is a significant difference (consider a **5%** significance level)

HINTS | Complete Solution

- p_value = 3.742e^-05, There is a significant difference in machine performance
- p_value = 1.812e^-05, There is no significant difference in machine performance
- **p_value = 1.812e^-05, There is a significant difference in machine performance**
- p_value = 3.742e^-05, There is no significant difference in machine performance

Marathon Race time

Flag Question

In a sample of marathon race times, the mean time is 4 hours, and the standard deviation is 30 minutes. If you set the Z-score threshold to 2, which race times would be considered outliers?

HINTS | Complete Solution

- Times below 3 hours and 30 minutes
- Times above 4 hours
- Times above 4 hours and 45 minutes
- **Times below 2 hours and 45 minutes**

Your answer to this question has been recorded. It will be evaluated after the end of the contest. If you change your answer, kindly re-submit.

Re-Submit

IQ test

Flag Question

Sun Pharmaceutical Industries claims that a person's IQ improves after they use the Donepezil drug.

To test this claim a trial was conducted considering **20** patients. An IQ test was conducted for these patients before giving the drug and an IQ test was conducted for the same set of patients after the drug the recorded results are shown below.

IQ_before=[101,124,89,57,135,98,69,105,114,106,97,121,93,116,102,71,88,108,144,99]

IQ_after=[113,127,89,70,127,104,69,127,115,99,104,120,95,129,106,71,94,112,154,96]

Perform an appropriate test to test the claim at **90%** confidence.

HINTS | Complete Solution

- (●) **p value = 0.009, Reject the Null Hypothesis**
- ( ) **p value = 0.009, Fail to reject the Null Hypothesis**
- ( ) **p value = 0.018, Fail to reject the Null Hypothesis**
- ( ) **p value = 0.018, Reject the Null Hypothesis**

Your answer to this question has been recorded. It will be evaluated after the end of the contest. If you change your answer, kindly re-submit.

Re-Submit

S1 Default Section

Q1 > Q2 > Q3 > Q4 > Q5 > Q6 > Q7 > Q8 > Q9

S1

Q 1

Q 2

Q 3

Q 4

Q 5

Q 6

Q 7

Q 8

Q 9

Error Rate

Flag Question

In hypothesis testing, what is the type I error rate if we set the significance level (α) at 0.01?

HINTS | Complete Solution

- (●) 0.01
- ( ) 0.001
- ( ) 0.05
- ( ) 0.10

Your answer to this question has been recorded. It will be evaluated after the end of the contest. If you change your answer, kindly re-submit.

Re-Submit

p-value

Flag Question

Setting the p-level at 0.01 increases the chances of making

HINTS | Complete Solution

- (●) **Type II error**
- ( ) **Type I error**
- ( ) **Type III error**
- ( ) **All of the above**

Your answer to this question has been recorded. It will be evaluated after the end of the contest. If you change your answer, kindly re-submit.

Re-Submit

S1

Q 1 Q 2 Q 3 Q 4 Q 5 Q 6 Q 7 Q 8 Q 9

S1 Default Section

Q1 > Q2 > Q3 > Q4 > Q5 > Q6 > Q7 > Q8 > Q9

S1

Q 1
Q 2
Q 3
Q 4
Q 5
Q 6
Q 7
Q 8
Q 9

Highway mileage

Flag Question

A popular car manufacturing brand claims that their car model Rex500 has an **average** highway mileage of **21.50 Km/L**, you want to test whether this claim is statistically significant or not.

You managed to get data from **45 cars** of this model and found that the **average** highway mileage is **20.42 Km/L**, with a **standard deviation** of **2.7 Km/L**

With **99%** confidence, will you be able to conclude that the average highway mileage is statistically lower than the claimed fuel economy?

Use the appropriate test and select the **correct** option below:

HINTS | Complete Solution

- p_value = 0.0028, average highway mileage = 21.5 Km/L
- p_value = 0.0028, average highway mileage < 21.5 Km/L
- p_value = 0.0036, average highway mileage = 21.5 Km/L
- **p_value = 0.0036, average highway mileage < 21.5 Km/L**

Your answer to this question has been recorded. It will be evaluated after the end of the contest. If you change your answer, kindly re-submit.

Re-Submit

New Flagship Product

Flag Question

A software company is planning to release a new version of its flagship product. The intent is that the new version will be better as compared to the previous version. Formulate the null and alternative hypotheses for this scenario.

HINTS | Complete Solution

- (●) **Null Hypothesis (H0): The new version will have the same number of reported bugs as the previous version. Alternative Hypothesis (H1): The new version will reduce the number of reported bugs.**
- ( ) **Null Hypothesis (H0): The new version will increase the number of reported bugs compared to the previous version. Alternative Hypothesis (H1): The new version will have the same number of reported bugs.**
- ( ) **Null Hypothesis (H0): The new version will have more reported bugs than the previous version. Alternative Hypothesis (H1): The new version will have fewer reported bugs.**
- ( ) **Null Hypothesis (H0): The new version will not affect the number of reported bugs compared to the previous version. Alternative Hypothesis (H1): The new version will increase the number of reported bugs.**

Your answer to this question has been recorded. It will be evaluated after the end of the contest. If you change your answer, kindly re-submit.

Re-Submit

New Feature Quarter

Flag Question

You have a dataset with a 'date' column in the format 'YYYY-MM-DD'. You want to create a new feature 'quarter' which indicates the quarter of the year (Q1, Q2, Q3, or Q4) corresponding to each date. Which of the following code snippets achieves this task correctly?

HINTS | Complete Solution

- (●) **df['quarter'] = pd.to_datetime(df['date']).dt.quarter**
- ( ) **df['quarter'] = pd.to_datetime(df['date']).apply(lambda x: 'Q'+str((x.month-1)//3+1).zfill(2))**
- ( ) **df['quarter'] = pd.to_datetime(df['date']).dt.month // 3 + 2**
- ( ) **df['quarter'] = pd.to_datetime(df['date']).apply(lambda x: 'Q'+str((x.month-1)//3+2))**

Your answer to this question has been recorded. It will be evaluated after the end of the contest. If you change your answer, kindly re-submit.

Re-Submit