Assignment - Statistics [Major]

Grading				
Parameters	Scale			Maximum Marks
	10	5	0	
Approach	If the approach to solve the question is correct.	If the approach to solve the question is partially correct.	If the approach to solve the question is incorrect	10
Correctness of the solution	If the answer is completely correct	If the answer is partially correct or they lack presentation skills	If the assignment is not submitted or the answer is incorrect or completely different from the expected answer.	10
			Maximum Marks	20

1. **According to a study, the daily average time spent by a user on a social media website is 50 minutes. To test the claim of this study, Ramesh, a researcher, takes a sample of 25 website users and finds out that the mean time spent by the sample users is 60 minutes and the sample standard deviation is 30 minutes.**
   Based on this information, the null and the alternative hypotheses will be:
   Ho = The average time spent by the users is 50 minutes
   H1 = The average time spent by the users is not 50 minutes

   Use a 5% significance level to test this hypothesis.

2. **Height of 7 students (in cm) is given below. What is the median? 168 170 169 160 162 164 162.**

3. **Below are the observations of the marks of a student. Find the value of mode.**
   84 85 89 92 93 89 87 89 92

4. **From the table given below, what is the mean of marks obtained by 20 students?**

Marks Xi	No. of students fi
3	1
4	2
5	2
6	4
7	5
8	3
9	2
10	1
Total	20

5. **For a certain type of computer, the length of time between charges of the battery is normally distributed with a mean of 50 hours and a standard deviation of 15 hours. John owns one of these computers and wants to know the probability that the length of time will be between 50 and 70 hours.**

6. **Find the range of the following.**
   g = [10, 23, 12, 21, 14, 17, 16, 11, 15, 19]

7. **It is estimated that 50% of emails are spam emails. Some software has been applied to filter these spam emails before they reach your inbox. A certain brand of software claims that it can detect 99% of spam emails, and the probability for a false positive (a non-spam**

email detected as spam) is 5%. Now if an email is detected as spam, then what is the probability that it is in fact a non-spam email?

8. Given the following distribution of returns, determine the lower quartile:

   {10 25 12 21 19 17 16 11 15 19}

9. For a Binomial distribution, the number of trials(n) is 25, and the probability of success is 0.3. What's the variability of the distribution?

10. Download the Cell Phone Survey Dataset and perform the below mentioned operations on the dataset:-
    - Checking datatypes of each column in the dataset.
    - Find Mean of Signal strength column using Pandas and Statistics library.
    - Find the Median of Customer Service column using Pandas and Statistics library.
    - Find Mode of Signal strength column using Pandas and Statistics library.
    - Find Standard deviation of Customer Service column using Pandas and Statistics library.
    - Find Variance of Customer Service column using Pandas and Statistics library.
    - Calculate Percentiles of Value for the Dollar column using Numpy.
    - Calculate Range of Value for the Dollar column using Pandas.
    - Calculate IQR of Value for the Dollar column using Pandas.
    - Hypothesis Testing - Using the data in the Cell Phone Survey dataset, apply ANOVA to determine if the mean response for Value for dollar is the same for different types of cell phones.

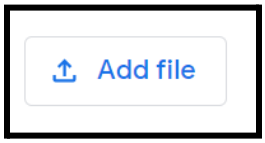
Process for Submission

Please upload your assignment files via this Google-form before the deadline (22nd May, 2023 11:59 pm). Upload the assignment file name as **Assignment - Statistics [Major] by <your-name>**

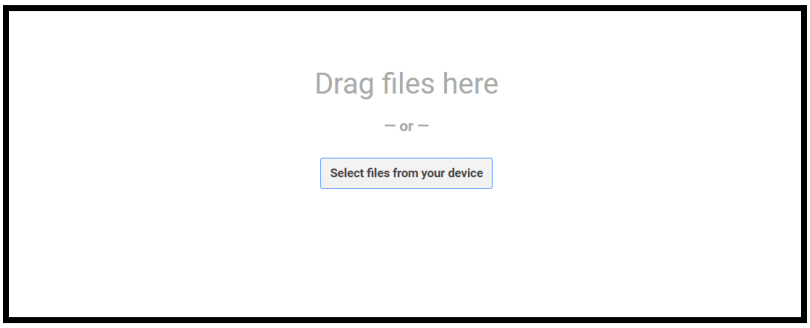
CLICK HERE to Access the **Google-form**.

Steps to submit the assignment:

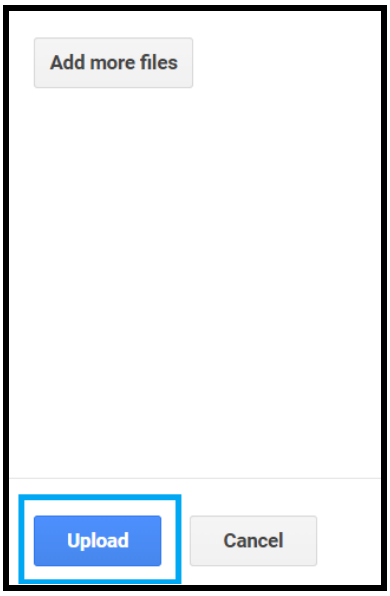
1. Open the Google Form.
2. Enter your email id, name, assignment name.
3. And upload the assignment file by clicking the Add file button.



4. You can upload the file by clicking Select file from your device or by dragging the file and dropping it in the window opened.



5. Select your assignment file and click the Open button.
6. After selecting the file click on the Upload button.



7. Once the file is uploaded, click on the Submit button.