

Statistics Basics

Assignment Questions



Statistics Basics

1. What is statistics, and why is it important?
2. What are the two main types of statistics?
3. What are descriptive statistics?
4. What is inferential statistics?
5. What is sampling in statistics?
6. What are the different types of sampling methods?
7. What is the difference between random and non-random sampling?
8. Define and give examples of qualitative and quantitative data.
9. What are the different types of data in statistics?
10. Explain nominal, ordinal, interval, and ratio levels of measurement.
11. What is the measure of central tendency?
12. Define mean, median, and mode.
13. What is the significance of the measure of central tendency?
14. What is variance, and how is it calculated?
15. What is standard deviation, and why is it important?
16. Define and explain the term range in statistics.
17. What is the difference between variance and standard deviation?
18. What is skewness in a dataset?
19. What does it mean if a dataset is positively or negatively skewed?
20. Define and explain kurtosis.
21. What is the purpose of covariance?
22. What does correlation measure in statistics?
23. What is the difference between covariance and correlation?
24. What are some real-world applications of statistics?

Practical

1. How do you calculate the mean, median, and mode of a dataset?
2. Write a Python program to compute the variance and standard deviation of a dataset.
3. Create a dataset and classify it into nominal, ordinal, interval, and ratio types.
4. Implement sampling techniques like random sampling and stratified sampling.
5. Write a Python function to calculate the range of a dataset.
6. Create a dataset and plot its histogram to visualize skewness.
7. Calculate skewness and kurtosis of a dataset using Python libraries.
8. Generate a dataset and demonstrate positive and negative skewness.
9. Write a Python script to calculate covariance between two datasets.
10. Write a Python script to calculate the correlation coefficient between two datasets.
11. Create a scatter plot to visualize the relationship between two variables.
12. Implement and compare simple random sampling and systematic sampling.
13. Calculate the mean, median, and mode of grouped data.
14. Simulate data using Python and calculate its central tendency and dispersion.

15. Use NumPy or pandas to summarize a dataset's descriptive statistics.
16. Plot a boxplot to understand the spread and identify outliers.
17. Calculate the interquartile range (IQR) of a dataset.
18. Implement Z-score normalization and explain its significance.
19. Compare two datasets using their standard deviations.
20. Write a Python program to visualize covariance using a heatmap.
21. Use seaborn to create a correlation matrix for a dataset.
22. Generate a dataset and implement both variance and standard deviation computations.
23. Visualize skewness and kurtosis using Python libraries like matplotlib or seaborn.
24. Implement the Pearson and Spearman correlation coefficients for a dataset.