



SAVEETHA SCHOOL OF ENGINEERING
SAVEETHA INSTITUTE OF MEDICAL AND TECHNICAL SCIENCES



SAVEETHA UNIVERSITY

Department of Computer Science and Engineering

Course Code: DSA0416 (C-Slot)	Course Name: Fundamentals of Data Science for Risk Management	
Branch: AI&DS	Year: II/III/IV	Date: 24.07.2024

1. Scenario: To identify potential bottlenecks by analyzing the performance of servers, you want to determine the 25th, 50th, and 75th percentiles of response times.

2. Scenario: In a medical study, you have collected data on patients recovery times after a procedure. Calculate the 10th, 50th, and 90th percentiles to understand the distribution of recovery times.

3. You are working with an e-commerce company that has collected data on the purchase amounts made by customers over the past month. The dataset includes the purchase amounts (in dollars) for each transaction. Utilize measures of central tendency to answer the following questions:

- Calculate the mean (average) purchase amount to understand the typical spending behavior of customers.
- Identify the mode of the purchase amounts to find the most frequently occurring purchase amount, helping the company understand popular spending levels

4. Scenario: You are dealing with a dataset containing the monthly expenses of different departments in a company. Use NumPy functions to efficiently calculate both the variance and covariance matrix of these expenses.

5. Scenario: You are investigating a dataset representing the daily temperatures in a city. Calculate the variance and identify potential outliers that may indicate unusual weather conditions.

6. Write a python program will take in a dataset containing daily temperature readings for each city over a year and perform the following tasks:

- Calculate the mean temperature for each city.
- Calculate the standard deviation of temperature for each city.
- Determine the city with the highest temperature range (difference between the highest and lowest temperatures).
- Find the city with the most consistent temperature (the lowest standard deviation).

7. Scenario: You are working with a dataset representing the daily sales of a product over the past month. Calculate the variance of the daily sales to understand how much the sales figures deviate from the mean.