

# CS 5356 Advanced Database Management System

[Assignment 3]

[November 29th, 11:59 pm]

## Objective

The objective of this assignment is to provide you with hands-on experience in applying advanced OLAP operations and queries to analyze complex business data. You will gain practical knowledge of drill-down, roll-up, slice-and-dice, and advanced aggregation techniques to extract meaningful insights from multidimensional data.

## Scenario

You are a junior data analyst at a retail company. You're tasked with analyzing a subset of the company's sales data to provide insights into product performance and customer preferences.

## Tasks

### 0.1 Analyze Product Sales

- Perform basic drill-down operations to evaluate sales performance in a single region over the most recent year.
- Identify top-selling products in this region.

### 0.2 Customer Segmentation

- Use simple OLAP operations to segment customers based on a limited set of criteria (e.g., purchase frequency or average spend).
- Identify general trends in customer preferences

### 0.3 Sales Forecasting

- Use basic aggregation techniques to forecast sales for the next quarter, considering simple factors like historical sales trends.

## **0.4 Basic OLAP Queries**

- Construct basic OLAP queries involving a single dimension and measure.
- Focus on queries that are straightforward and demonstrate basic understanding.

## **0.5 Deliverables**

### **0.5.1 Comprehensive Report**

Prepare a brief report summarizing your analysis and findings. Include simple charts or graphs to illustrate key points. Provide essential code used for the OLAP operations and queries.

## **0.6 Evaluation Criteria**

- Thoroughness and accuracy of data analysis. (20 points)
- Basic understanding and application of OLAP operations (25 points)
- Effectiveness of data visualizations and communication of findings. (25 points)
- Clarity and completeness of code documentation and report. (30 points)

## **0.7 Additional Notes**

- You are encouraged to use any OLAP tools or technologies of your choice, such as SQL Server Analysis Services, Oracle Essbase, or Pentaho BI Suite.
- Make realistic assumptions about the data and business processes of the retail company. Clearly document any assumptions you make.
- This assignment is designed to challenge your analytical skills and problem-solving abilities. Approach it with a methodical and inquisitive mindset.