

ALTERNATIVE ASSESSMENT 1 (50 marks) - WEEK 12

Answer the question below based on the given scenario. Submit your answer within **ONE (1) DAY** after the question is given in SPECTRUM. Answers should be submitted and saved with the student's name followed by matric number as the file name in the format of .pdf (e.g. Ali_s123456.pdf).

Case Study: E-Commerce Customer Behaviour Analysis**Background:**

You will work with a dataset of customer transactions from an e-commerce website, encompassing various customer attributes and purchase history over the last year. The structure provided below is a guideline. Feel free to enhance this dataset by adding relevant attributes that you believe will enrich your analysis. Use the structure as a foundation to create your own sample dataset that reflects realistic customer behaviour.

Dataset Structure:

CustomerID: Unique identifier for each customer.

Age: Age of the customer.

Gender: Gender of the customer.

Location: Geographic location of the customer.

MembershipLevel: Indicates the membership level (e.g., Bronze, Silver, Gold, Platinum).

TotalPurchases: Total number of purchases made by the customer.

TotalSpent: Total amount spent by the customer.

FavoriteCategory: The category in which the customer most frequently shops (e.g., Electronics, Clothing, Home Goods).

LastPurchaseDate: The date of the last purchase.

[Additional Attributes]: Consider adding more attributes like customer's occupation, frequency of website visits, etc.

Churn: Indicates whether the customer has stopped purchasing (1 for churned, 0 for active).

Tasks

Data Import and Preprocessing: Import your dataset into SAS Enterprise Miner, handle missing values, and specify variable roles.

[15 marks]

Decision Tree Analysis: Create a decision tree model in SAS Enterprise Miner to analyse customer behaviour.

[20 marks]

Ensemble Methods: Apply Bagging and Boosting, using the Random Forest algorithm as a Bagging example.

[10 marks]

Deliverables:

A report detailing each step of the process, including the rationale behind your choices and any challenges faced.

An analysis of the decision tree and ensemble methods, with insights into customer behavior and suggestions for business strategy.

[5 marks]

Objective:

The case study aims to assess students' ability to apply decision tree and ensemble methods in a practical context, demonstrating their understanding of the concepts and their ability to derive meaningful business insights from data analysis.