Hands-on Assessment
ML

Scenario:

You are a data scientist at a retail company, and you have been tasked with developing a machine learning model to predict customer purchasing behaviour based on historical data. The company wants to personalize marketing strategies to target specific customer segments more effectively. You will use Azure Machine Learning to build and train the machine learning model.

Tasks:

1. **Data Preparation:** a. Access the provided dataset in Azure Blob Storage containing historical customer data. b. Load the dataset and preprocess it to prepare it for training. Perform necessary data cleaning, feature selection, and feature engineering.
2. **Model Development:** a. Choose an appropriate machine learning algorithm for predicting customer purchasing behaviour. b. Split the dataset into training and testing sets. c. Train the machine learning model using the training dataset. d. Evaluate the model's performance using appropriate evaluation metrics.
3. **Hyperparameter Tuning:** a. Optimize the model's performance by tuning hyperparameters. Use techniques such as grid search or random search to find the best set of hyperparameters.

Assessment Questions:

1. What are the key steps involved in preparing the dataset for training a machine learning model using Azure Machine Learning? Briefly explain each step.
2. Why is it important to split the dataset into training and testing sets when developing a machine learning model? How does this help in model evaluation?
3. Describe a machine learning algorithm suitable for predicting customer purchasing behaviour in the given scenario. Explain why you chose this algorithm.
4. What is hyperparameter tuning, and why is it important in machine learning? Explain a technique used for hyperparameter tuning and its benefits.

Dataset:

https://github.com/manojkumarsingh77/Shell2023/blob/main/AssessmentData/customer_data.csv

Rubrics:

SNO	Parameters	Marks	Comments
1.	**Data Preparation**	**20**	
2.	**Model Development**	**20**	
3.	**Hyperparameter Tuning**	**20**	
4.	**Assessment Questions**	**40**	

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Instruction for Submission:

1. **Step by Step screenshot of your steps in your Azure Machine Learning Studio designer.**
2. **Open each stage and take detailed screenshot.**
3. **Paste all screenshots on a word document and convert it in pdf format and upload on Lumen LMS.**