Assignment 1: Analyzing Customer Churn in a Telecom Company

Objective:

To analyze customer churn data from a telecom company and develop strategies to reduce customer attrition.

Data:

- Use the provided dataset containing customer information, usage patterns, and churn status.

Tasks:

1. **Data Exploration and Cleaning:**
    - Explore the dataset to understand its structure, variables, and missing values.
    - Clean and preprocess the data to handle missing values, outliers, and inconsistencies.
    - Perform exploratory data analysis (EDA) to identify patterns, trends, and relationships between variables.
2. **Feature Engineering:**
    - Create new features that might be relevant to customer churn, such as customer tenure, average monthly revenue, and usage patterns.
3. **Customer Segmentation:**
    - Segment customers based on their characteristics and behavior to identify high-risk churn segments.
4. **Churn Prediction Modeling:**
    - Build and train machine learning models (e.g., logistic regression, decision trees, random forests) to predict customer churn.
    - Evaluate model performance using appropriate metrics (e.g., accuracy, precision, recall, F1-score).
5. **Churn Analysis:**
    - Analyze the factors that contribute to customer churn, such as contract length, customer satisfaction, and pricing.
6. **Develop Churn Reduction Strategies:**
    - Propose targeted marketing campaigns, loyalty programs, or product improvements to reduce churn.

Deliverables:

- **Data analysis report:** A comprehensive report summarizing your findings, including data exploration, segmentation, modeling, and churn analysis.
- **Machine learning model:** The trained machine learning model used for churn prediction.
- **Churn reduction strategies:** A detailed plan outlining the proposed strategies to reduce customer churn.
- **Presentation:** A presentation summarizing your findings and recommendations.

Evaluation Criteria:

- **Data analysis skills (20%):** Ability to effectively explore, clean, and analyze the data.
- **Machine learning skills (20%):** Understanding of machine learning algorithms and their application to churn prediction.
- **Problem-solving skills (20%):** Ability to identify and address challenges in the data analysis process.
- **Communication skills (20%):** Clear and concise presentation of findings and recommendations.
- **Creativity and innovation (20%):** Ability to propose original and effective churn reduction strategies.