**Assignment 2:**

**Scenario: Predicting Customer Churn in Telecommunications**

**Question:** Imagine you're a data scientist at a leading telecommunications company. The company is concerned about customer churn and wants to leverage machine learning to predict which customers are likely to leave their service. Your task is to develop a predictive model using machine learning techniques to assist the company in identifying at-risk customers and implementing targeted retention strategies.

**Task:** Utilizing the provided dataset containing customer demographics, usage patterns, and service options, design and implement a logistic regression model to predict customer churn. Your model should accurately classify customers into two groups: those likely to churn and those likely to stay. Additionally, provide an analysis of the key features influencing churn prediction and suggest potential retention strategies based on your findings.

**Deliverables:**

1. A well-documented Jupyter Notebook or Python script containing:
   * Data preprocessing steps
   * Model training and evaluation
   * Interpretation of results
2. A detailed report summarizing your approach, model performance, and recommendations for the telecommunications company.

**Evaluation Criteria:**

* Data preprocessing techniques applied
* Model training and evaluation methods used
* Model performance metrics (e.g., accuracy, precision, recall)
* Interpretation of model results and feature importance analysis
* Clarity and organization of the Jupyter Notebook
* Quality and depth of insights provided in the report

**Deadline:** 02/02/2024

**Note:** Feel free to explore additional machine learning algorithms or techniques beyond logistic regression if you believe they would improve the predictive performance of the model. However, ensure that your approach is well-documented and justified in the report.