# Customer Churn Prediction Project Report

## 1. Project Title:

Customer Churn Prediction using Logistic Regression

## 2. Objective:

To predict customers who are likely to leave the company (churn) and provide actionable strategies to reduce churn rates and improve customer retention.

## 3. Dataset Description:

• Dataset Name: WA\_Fn-UseC\_-Telco-Customer-Churn.csv

• Source: Codec Technologies (provided for project work)

• Details: The dataset includes customer demographics, account information, service details, and whether the customer churned.

## 4. Tools and Technologies Used:

• Python  
• Pandas  
• NumPy  
• Scikit-learn  
• Spyder

## 5. Project Workflow:

1. Data Loading: Loaded the Telco Customer Churn dataset.

2. Data Cleaning: Handled missing values and removed unnecessary columns.

3. Data Encoding: Converted categorical variables into numerical form using label encoding.

4. Model Building: Built a logistic regression model for churn prediction.

5. Model Evaluation: Evaluated model accuracy, confusion matrix, and classification report.

6. Customer Prediction: Identified customers likely to churn.

7. Output Generation: Displayed high-risk customers and saved the list as a CSV file.

8. Churn Reduction Strategies: Provided actionable strategies to retain customers.

## 6. Model Performance:

• Accuracy:81.68%

• Confusion Matrix:  
[[939 97]

[161 212]]

• Classification Report: Provided precision, recall, and F1-score showing satisfactory performance in predicting both churned and non-churned customers.

## 7. High-Risk Customers Identified:

Sample customers predicted to churn:

• Customer at index 0  
• Customer at index 4  
• Customer at index 5  
• Customer at index 8  
• Customer at index 19

(Complete list saved as ‘High\_Risk\_Customers.csv’)

## 8. Churn Reduction Strategies:

• Provide personalized retention offers.  
• Improve customer support and response time.  
• Offer loyalty programs for long-term customers.  
• Collect feedback through regular surveys.  
• Provide flexible billing and service customization.

## 9. Conclusion:

The customer churn prediction project successfully identified at-risk customers using logistic regression. By applying the recommended strategies, the company can reduce churn rates and enhance customer satisfaction.

# 10.Attachments:

- Python Source Code (customer\_churn.py)  
- Dataset File (WA\_Fn-UseC\_-Telco-Customer-Churn.csv)

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