Project Summary: Telco Customer Churn Prediction

# Overview

This notebook is a data science project focused on analyzing customer churn using a dataset from a telecommunications company.  
It includes the following components:  
  
1. \*\*Data Import and Loading\*\*:  
 - Libraries such as pandas, numpy, and matplotlib are imported.  
 - The dataset `Telco-Customer-Churn.csv` is loaded for analysis.  
  
2. \*\*Exploratory Data Analysis (EDA)\*\*:  
 - Initial data inspection (head, info, describe).  
 - Checking for missing values.  
 - Visualizations using matplotlib and possibly seaborn.  
  
3. \*\*Feature Engineering\*\*:  
 - Data transformation for consistency (e.g., converting 'TotalCharges' to numeric).  
 - Encoding categorical variables for model input.  
  
4. \*\*Modeling\*\*:  
 - Machine learning models like Logistic Regression, Decision Tree, or Random Forest may be used.  
 - Model training and evaluation (accuracy, confusion matrix, etc.).  
  
5. \*\*Insights\*\*:  
 - Final insights and recommendations based on model output.  
  
The objective is to predict whether a customer will churn based on various features (gender, contract type, internet service, etc.) and to gain insights for business decision-making.

# Dataset Information

The dataset contains 7043 customer records with 21 columns including:

customerID, gender, SeniorCitizen, Partner, Dependents, tenure, PhoneService, MultipleLines, InternetService, OnlineSecurity, OnlineBackup, DeviceProtection, TechSupport, StreamingTV, StreamingMovies, Contract, PaperlessBilling, PaymentMethod, MonthlyCharges, TotalCharges, Churn

## Key Fields

- customerID: Unique identifier.  
- gender, SeniorCitizen, Partner, Dependents: Demographic data.  
- tenure: Number of months with the company.  
- InternetService, OnlineSecurity, etc.: Services used.  
- Contract, PaymentMethod, MonthlyCharges, TotalCharges: Financial info.  
- Churn: Target variable (Yes/No).