

# Customer Churn Analysis

## Objective:

The goal of this project is to analyze customer churn patterns in a dataset, identify key factors contributing to churn, and visualize insights using pandas, NumPy, Matplotlib, and Seaborn.

## Key Steps:

### 1. Data Loading & Preprocessing:

- Reads the dataset (Customer Churn.csv) into a DataFrame.
- Handles missing values (df.isnull().sum()).
- Converts TotalCharges from string to float after replacing empty spaces.

### 2. Exploratory Data Analysis (EDA):

- Uses df.info() to check data types and missing values.
- Generates visualizations (e.g., pie charts, bar plots) to explore categorical variables like:
  - Phone Service, Internet Service, Streaming Services, Tech Support, etc.

### 3. Visualizations & Insights:

- Uses Seaborn and Matplotlib for plotting:
  - Count plots for categorical variables.
  - Pie charts to analyze churn distribution.
  - Subplots to visualize multiple variables efficiently.

## Next Steps (Possible Enhancements):

- Feature engineering: Create new meaningful features.
- Statistical analysis: Find correlations between churn and customer behavior.
- Machine learning: Apply classification models (e.g., Logistic Regression, Random Forest) to

predict churn.