📊 Customer Churn Analysis – Summary Report

🎯 Objective

To explore and analyze customer churn behavior using a telecom dataset. The goal is to identify patterns and features associated with customers who are more likely to stop using the service.

🗂️ 1. Data Loading and Setup

- **Libraries used**: `pandas`, `numpy`, `matplotlib.pyplot`, `seaborn`
- **Dataset**: `Customer Churn.csv`
- Loaded into a DataFrame and the first few records were displayed to understand the structure.

🧹 2. Data Cleaning

- The `TotalCharges` column contained blank spaces, which were replaced with `0` and converted to `float`.
- Data types and null values were checked using `.info()` and `.isnull().sum().sum()`
- ✅ The dataset was clean with **no missing values**.

📈 3. Exploratory Data Analysis (EDA)

🔁 Churn Overview

- **Count Plot** and **Pie Chart** used to visualize churn distribution.
- 📌 **Insight**: Approximately **26.54%** of customers in the dataset have churned.

👥 4. Demographic Analysis

👴 Senior Citizens

- The `SeniorCitizen` column (0/1) was converted to “no”/“yes”.
- Count and stacked bar plots were used to show churn by senior status.
- 📌 **Insight**: **Senior citizens churn at a higher percentage** compared to non-seniors.

🚻 Gender

- Count plot showed churn distribution by gender.
- 📌 **Insight**: **No significant difference** in churn between male and female customers.

⏳ 5. Tenure Analysis

- Histogram plotted to analyze churn across tenure.
- 📌 **Insight**:
    - Customers with **1–2 months tenure churn the most**.
    - Customers with **longer tenure are more loyal** and less likely to churn.

📃 6. Contract Type Analysis

- Count plots for contract types (Month-to-month, One year, Two year).
- 📌 **Insight**:
    - **Month-to-month contracts have the highest churn rate**.
    - **1- and 2-year contracts have lower churn**, indicating better customer retention.

📝 Summary of Key Insights

Feature	Insight
Churn Rate	~26.54% of customers have churned
Senior Citizens	Higher churn percentage than non-seniors
Tenure	Short-tenure customers churn most; longer-tenure are more loyal
Contract Type	Month-to-month contracts show highest churn rate
Gender	No significant impact on churn
