Project Title: Telco Customer Churn Analysis (EDA)

Domain: Data Science

Tools & Technologies Used: Python, Pandas, Seaborn, Matplotlib, NumPy, Jupyter Notebook

Dataset Used: Telco-Customer-Churn.csv (sourced from Kaggle or company-provided)

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1. Objective:

To analyze customer churn patterns in a telecom company by using Exploratory Data Analysis (EDA) techniques. The project aims to uncover key trends and contributing factors to churn, with the ultimate goal of informing strategies that can reduce customer attrition and improve business performance.

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2. Steps Performed:

a. Data Loading & Inspection:

- Imported libraries: `pandas`, `matplotlib.pyplot`, `seaborn`, `numpy`
- Loaded the dataset into a DataFrame
- Conducted initial inspection using:
- `.info()` to understand data types and nulls
- `.describe()` for statistical overview
- `.isnull().sum()` to count missing values
- `.duplicated()` to identify duplicates in `customerID`

b. Data Cleaning:

- Cleaned `TotalCharges` column:
- Handled empty strings by replacing with 0
- Converted to float for numerical analysis
- Encoded `SeniorCitizen` column (0 → No, 1 → Yes) for easier readability
- Checked for consistency across all fields

c. Exploratory Analysis & Visualization:

1. **Churn Distribution:**

2. Bar plot and pie chart:

    - **Churned:** 26.54%
    - **Not Churned:** 73.46%

3. **Insight:** Significant churn rate—critical business concern

4. **Churn by Gender:**
5. Males: 50.5% of data → Churn rate \~26.6%
6. Females: 49.5% of data → Churn rate \~26.4%
7. **Insight:** Gender is not a significant churn indicator
8. **Churn by Senior Citizen Status:**
9. Seniors (16.2% of customers): **Churn rate \~42.2%**
10. Non-seniors (83.8%): **Churn rate \~23.1%**
11. **Insight:** Seniors have nearly 2x churn likelihood
12. **Tenure vs Churn:**
13. Histogram revealed that customers with **< 10 months tenure** are most likely to churn
14. **Insight:** Longer-tenured customers are more stable and loyal

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3. Additional Visualizations:

- **Contract Type vs Churn:** Month-to-month contracts showed highest churn
- **Paperless Billing vs Churn:** Higher churn with paperless billing users
- **Monthly Charges Distribution:** Higher charges loosely associated with churn

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4. Key Insights:

- **Tenure** is a strong predictor: New users churn more
- **Senior citizens** are more at risk, highlighting a need for tailored engagement
- **Contract type and billing method** significantly influence retention
- **High monthly charges** may be associated with dissatisfaction or affordability concerns

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5. Conclusion:

This EDA project uncovered critical business insights from the Telco dataset. Identifying churn-prone customer segments enables the telecom provider to take proactive measures in reducing attrition and increasing customer satisfaction.

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6. Recommendations:

- Implement loyalty programs or benefits for senior citizens
- Encourage longer-term contracts through discounts
- Follow-up campaigns for customers with tenure < 6 months
- Review and simplify high-charging plans

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7. Files Submitted:

- `EDA(TCA).ipynb` – Jupiter Notebook with full code and visualizations
- `Telco-Customer-Churn.csv` – Dataset file
- `Project Report` – Formal report including analysis summary

Submitted By: Rajeev

\ **Internship Domain:** Data Science

\ **Organization:** Skillbit Technologies