Project: Customer Churn Analysis

Objective:

Analyze customer behavior to identify patterns that lead to churn (customers leaving a service). This project will use **Pandas, NumPy, and Matplotlib** to clean data, perform analysis, and visualize insights.

Dataset Details (`customer_churn.csv`)

The dataset contains the following columns:

- **Customer ID**: Unique identifier for each customer.
- **Subscription Length (months)**: Number of months the customer has been subscribed.
- **Monthly Charges (INR)**: The amount billed to the customer every month.
- **Total Charges (INR)**: The total amount paid by the customer.
- **Payment Method**: The payment method used (Credit Card, PayPal, etc.).
- **Region**: The geographical region of the customer.
- **Churn**: Whether the customer left the service (Yes/No).

Tasks:

1. Data Loading & Cleaning

a) Load the dataset into a Pandas DataFrame.
b) Check for missing values and handle them appropriately.
c) Convert the **Total Charges** column to a numerical format.

2. Data Analysis Using Pandas & NumPy

a) Calculate the **average subscription length** of churned vs. non-churned customers.
b) Identify which **region has the highest churn rate**.
c) Find the **average monthly charges** for churned and non-churned customers.
d) Determine which **payment method is most common** among churned customers.

3. Data Visualization Using Matplotlib

a) Plot a **bar chart** comparing average subscription lengths of churned vs. non-churned customers.
b) Create a **pie chart** to show the distribution of churned customers across different regions.
c) Plot a **histogram** for the distribution of total charges among customers.
d) Create a **scatter plot** to visualize the relationship between monthly charges and total charges.

4. Conclusion & Insights

- Summarize the **key findings** from the analysis.
- Suggest **business strategies** to reduce churn (e.g., offering discounts, targeting high-churn regions).