**📄 Customer Churn Analysis and Prediction**

**Task 3: Customer Segmentation**

**Objective**

The objective of this task is to segment customers of a telecommunications company based on key attributes — **tenure**, **monthly charges**, and **contract type** — and analyze churn rates across these segments. This helps in understanding customer behavior and identifying high-risk groups for churn.

**Methodology**

1. **Data Source:**  
   The dataset used is the *Telco Customer Churn* dataset from IBM, accessed via the following URL:  
   https://raw.githubusercontent.com/IBM/telco-customer-churn-on-icp4d/master/data/Telco-Customer-Churn.csv
2. **Data Cleaning:**
   * The customerID column was dropped as it is an identifier and not useful for segmentation.
   * The TotalCharges column was converted to numeric, with missing or invalid values removed.
3. **Segmentation Logic:**  
   Customers were grouped based on:
   * **Tenure:**
     + *New*: tenure < 12 months
     + *Mid*: 12 ≤ tenure < 48 months
     + *Loyal*: tenure ≥ 48 months
   * **Monthly Charges:**
     + *Low*: < $50
     + *Medium*: $50 to < $90
     + *High*: ≥ $90
   * **Contract Type:**
     + Month-to-month
     + One year
     + Two year

These categories were combined to form composite segments (e.g., New-High-Month-to-month).

1. **Churn Analysis:**  
   For each segment, the churn rate (percentage of customers who left) was calculated and visualized using bar charts.

**Tools & Skills Used**

* Python (Pandas, Seaborn, Matplotlib, Scikit-learn)
* Customer segmentation techniques (custom rule-based grouping)
* Analytical skills to interpret segmented churn data

**Results**

The analysis revealed that:

* **New customers with high monthly charges and month-to-month contracts** had the highest churn rates.
* **Loyal customers with low monthly charges and long-term contracts** had the lowest churn rates.
* Churn was significantly higher in month-to-month contract segments across all tenure and charge levels.

A bar chart was created to visualize churn rates across segments, making it easier to identify at-risk groups.

**Conclusion**

Segmenting customers provided valuable insights into churn behavior. The company can focus retention strategies on segments with the highest churn, such as **new high-charge customers on month-to-month contracts**, by offering targeted incentives or contract upgrades.

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