# TASK-2 (DAY-4)

# 2. Identifying Potential Bias in the Telco Customer Churn Dataset

## Step 1: Identifying Columns That May Introduce Bias

Certain attributes within the dataset might lead to biased or skewed churn predictions. Below are some key columns that pose a higher risk of bias.

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| Column Name | Bias Risk | Potential Concern |
| Gender | Medium | An imbalance in gender representation may result in biased model predictions. |
| Senior Citizen | High | Older individuals may exhibit different churn tendencies, leading to age-related bias. |
| Partner | Medium | Marital status may inadvertently influence churn predictions. |
| Dependents | Medium | The presence of dependents could impact customer behavior, potentially skewing model results. |
| Tenure | High | Customers with shorter engagement periods are more likely to churn, which may create predictive bias. |
| Payment Method | High | If electronic check users churn more, it might result in bias against certain financial groups. |
| Monthly Charges | High | Higher billing amounts might be associated with increased churn, introducing an income-based bias. |

## Step 2: Potential Impact of Bias on Churn Analysis

* Gender Bias\*\* → If churn rates vary significantly by gender, the model may unfairly generalize trends across all customers.
* Age Bias (Senior Citizen) → Older customers may have distinct churn behaviors due to factors like digital proficiency or service needs. However, a biased model might incorrectly penalize them.
* Financial Bias (Payment Method & Monthly Charges) → Specific payment methods or higher monthly costs could correlate with increased churn, disproportionately affecting lower-income customers.