Project Title	Predicting Customer Churn in Telecom Industry using Power BI or Tableau and SQL
Skills take away From This Project	**Power BI, Tableau and SQL**
Domain	**Telecom**

Problem Statement:

Predicting Customer Churn in Telecom Industry

Business Use Cases:

1. **Customer Retention**: Identify at-risk customers and proactively implement retention strategies.
2. **Marketing Campaigns**: Tailor marketing efforts towards customers who are more likely to churn.
3. **Service Improvement**: Analyze churn patterns to improve service offerings and customer support.
4. **Revenue Optimization**: Reduce churn rates to maintain a steady revenue stream.
5. **Customer Segmentation**: Segment customers based on churn probability to offer personalized experiences.

Approach:

Explain the approach or methodology learners should follow to tackle the problem statement.

1. **Data Collection**: Use SQL to query the telecom database and extract relevant data.

2. Data Preprocessing: Clean and preprocess the data to handle missing values, outliers, and normalize features.

3. Exploratory Data Analysis (EDA): Use Power BI or Tableau for data visualization to identify trends and patterns.

4. Feature Engineering: Create new features that could help in predicting churn.

5. Visualization and Reporting: Create detailed dashboards and reports in Power BI or Tableau to present findings.

Results:

Summarize the expected outcomes or results learners should aim to achieve by the end of the project.

Customer Insights: Detailed understanding of customer behavior and factors influencing churn.

Retention Strategies: Data-driven recommendations for reducing churn.

Business Reports: Comprehensive reports and dashboards highlighting key metrics and findings.

Interactive Dashboards: User-friendly dashboards that provide real-time insights into churn patterns and customer behavior.

Project Evaluation metrics:

Define the metrics or criteria used to evaluate the success and effectiveness of the project.

Data Accuracy: Correctness and reliability of the data used in analysis.

Insightfulness: The value and actionability of insights derived from the analysis.

Visualization Quality: Clarity, interactivity, and usefulness of the visualizations in presenting insights.

Report Completeness: The thoroughness and comprehensiveness of the final reports.

User Feedback: Stakeholder satisfaction and usability feedback on the dashboards.

Technical Tags:

List any technical tags or keywords relevant to the project.

- Customer Churn

Telecom Industry

Data Preprocessing

SQL

Power BI

Tableau

Data Visualization

Data Set:
https://drive.google.com/file/d/14_KqTbRMWAeMwaWMvPICSmdgXZKgHy-y/view?usp=sharing

Provide information about the dataset(s) provided for the project, including its source, format, and variables.

Data Set Explanation:

Explain the content and context of the dataset(s), including any preprocessing steps required.

- Content: The dataset includes demographic information, account information, and service usage details of telecom customers.

- Context: The dataset aims to predict customer churn, where 'Churn' is the target variable indicating whether a customer has left the service.

The dataset includes customer-related information such as demographic details, service usage patterns, billing information, and churn status. Preprocessing steps might include:

- Handling missing values.
- Normalizing numerical features.
- Splitting data into relevant subsets for analysis.

Project Deliverables:

Explain what learners need to submit upon project completion, such as source code and documentation.

1. **SQL Queries**: Scripts used for data extraction and preprocessing.

2. Data Preprocessing Documentation: Detailed steps and methods used for data cleaning and preparation.

3. Reports: Comprehensive PDF/Word reports summarizing the findings and insights.

4. Dashboards: Interactive dashboards created using Power BI or Tableau.

5. Presentations: Slide deck summarizing the project for stakeholder presentation.

Project Guidelines:

Provide guidelines and best practices for project development, including coding standards and version control usage.

Coding Standards: Follow industry-standard coding practices and write clean, maintainable SQL queries.

Documentation: Maintain comprehensive documentation for all stages of the project.

Questions to find the solution of churn analysis(MySQL and Power BI/Tableau)

1. Identify the total number of customers and the churn rate
2. Find the average age of churned customers
3. Discover the most common contract types among churned customers
4. Analyze the distribution of monthly charges among churned customers
5. Create a query to identify the contract types that are most prone to churn
6. Identify customers with high total charges who have churned
7. Calculate the total charges distribution for churned and non-churned customers
8. Calculate the average monthly charges for different contract types among churned customers
9. Identify customers who have both online security and online backup services and have not churned

10. Determine the most common combinations of services among churned customers

11. Identify the average total charges for customers grouped by gender and marital status

12. Calculate the average monthly charges for different age groups among churned customers

13. Determine the average age and total charges for customers with multiple lines and online backup

14. Identify the contract types with the highest churn rate among senior citizens (age 65 and over)

15. Calculate the average monthly charges for customers who have multiple lines and streaming TV

16. Identify the customers who have churned and used the most online services

17. Calculate the average age and total charges for customers with different combinations of streaming services

18. Identify the gender distribution among customers who have churned and are on yearly contracts

19. Calculate the average monthly charges and total charges for customers who have churned, grouped by contract type and internet service type

20. Find the customers who have churned and are not using online services, and their average total charges

21. Calculate the average monthly charges and total charges for customers who have churned, grouped by the number of dependents

22. Identify the customers who have churned, and their contract duration in months (for monthly contracts)

23. Determine the average age and total charges for customers who have churned, grouped by internet service and phone service

24. Create a view to find the customers with the highest monthly charges in each contract type

25. Create a view to identify customers who have churned and the average monthly charges compared to the overall average

26. Create a view to find the customers who have churned and their cumulative total charges over time

27. Stored Procedure to Calculate Churn Rate

28. Stored Procedure to Identify High-Value Customers at Risk of Churning.

Timeline:

Define the project timeline, including milestones and deadlines.

Phase-1: Data Collection and Preprocessing and Exploratory Data Analysis

Phase-2: Feature Engineering and Data Analysis

Phase-3: Visualization and Dashboard Creation

Phase-4: Report Writing and Final Presentation Preparation and Submission and Peer Review