**List of Concepts Used:**

1. **Customer Churn Prediction:**
2. **Classification:**
3. **Supervised Learning:**
4. **Pandas:**
5. **NumPy:**
6. **Matplotlib:**
7. **Seaborn:**
8. **Scikit-learn (sklearn):**
   * train\_test\_split
   * StandardScaler
   * LabelEncoder
   * LogisticRegression
   * RandomForestClassifier
   * GradientBoostingClassifier
   * accuracy\_score
   * classification\_report
   * confusion\_matrix
9. **Data Preprocessing:**
   * Handling Missing Values
   * Categorical Feature Encoding (Label Encoding, One-Hot Encoding)
   * Numerical Feature Scaling
10. **Feature Engineering:**
11. **Model Selection:**
12. **Model Training:**
13. **Model Evaluation:**
    * Accuracy
    * Precision
    * Recall
    * F1-Score
    * Confusion Matrix
14. **Feature Importance:**
15. **Correlation Heatmap:**
16. **Jupyter Notebook:**
17. **GitHub:**

**Quick Summary of the Concepts (in plain words):**

1. **Customer Churn Prediction:** Trying to figure out which customers are likely to stop using a service in the future.
2. **Classification:** A type of machine learning where the goal is to put things into different categories (in this case, "will churn" or "will not churn").
3. **Supervised Learning:** A way of training a computer model using labeled examples (we show it customers who did churn and those who didn't, so it can learn the patterns).
4. **Pandas:** A tool in Python for working with data in tables (like spreadsheets).
5. **NumPy:** A tool in Python for doing math and working with numbers efficiently.
6. **Matplotlib:** A tool in Python for creating basic charts and graphs.
7. **Seaborn:** A tool in Python that builds on Matplotlib to make more advanced and visually appealing statistical graphs.
8. **Scikit-learn (sklearn):** A big collection of ready-to-use tools in Python for machine learning, including ways to split data, prepare it, train models, and see how well they work.
   * train\_test\_split: A way to divide our data into two sets: one to train the model and another to test how well it learned.
   * StandardScaler: A method to make sure all the numerical features have a similar scale, so some don't unfairly influence the model.
   * LabelEncoder: A way to turn categories (like "yes" or "no") into numbers that the computer can understand.
   * LogisticRegression: A simple but useful model for predicting categories.
   * RandomForestClassifier: A more complex model that uses many decision trees to make predictions.
   * GradientBoostingClassifier: Another powerful model that builds trees one at a time, learning from the mistakes of the previous ones.
   * accuracy\_score: A way to measure how often the model's predictions are correct.
   * classification\_report: A summary of how well the model is predicting each category (churned or not churned), including precision, recall, and F1-score.
   * confusion\_matrix: A table that shows where the model is making mistakes (e.g., predicting someone will churn when they won't, or vice versa).
9. **Data Preprocessing:** The steps we take to clean and prepare the data before feeding it into the model so it can learn better.
   * Handling Missing Values: Dealing with empty spots in the data (e.g., by filling them in or ignoring them).
   * Categorical Feature Encoding: Turning text-based categories into numbers.
   * Numerical Feature Scaling: Adjusting the range of numerical values.
10. **Feature Engineering:** Creating new, potentially useful features from the existing ones to help the model make better predictions.
11. **Model Selection:** Choosing which machine learning algorithm(s) to use for our prediction task.
12. **Model Training:** The process of teaching the chosen model to learn patterns from the training data.
13. **Model Evaluation:** Measuring how well the trained model performs on unseen data.
    * Accuracy: Overall correctness of the predictions.
    * Precision: Of all the customers the model predicted would churn, how many actually did?
    * Recall: Of all the customers who actually churned, how many did the model correctly identify?
    * F1-Score: A balanced way to look at precision and recall together.
    * Confusion Matrix: A visual table of prediction results.
14. **Feature Importance:** Figuring out which features (customer characteristics) have the biggest impact on the model's predictions of churn.
15. **Correlation Heatmap:** A color-coded chart that shows how strongly different features in the data are related to each other.
16. **Jupyter Notebook:** An interactive environment where you can write and run code, see the results, and create documents that combine code, text, and visuals.
17. **GitHub:** A website where you can store and share your code and collaborate with others.