# Project Overview

**Project Title: Customer Sales Analysis**

**Description:**
This project focuses on analyzing customer sales data and customer churn data using Python and Pandas. The objective is to understand sales performance, customer behavior, and churn patterns through data analysis and visualization.

**Objectives:**

- Analyze product-wise and customer-wise sales
- Study customer churn distribution
- Identify key trends using data aggregation
- Visualize insights using charts
- Generate meaningful business insights

# Setup Instructions

1. Install Python/Pycharm on your system.
2. Clone or download the project repository.
3. Install the required library using:
4. pip install pandas
5. pip install matplotlib
6. Ensure `customer_churn.csv` or `sales_data.csv` is present in the same directory.
7. Run the program

# Code Structure

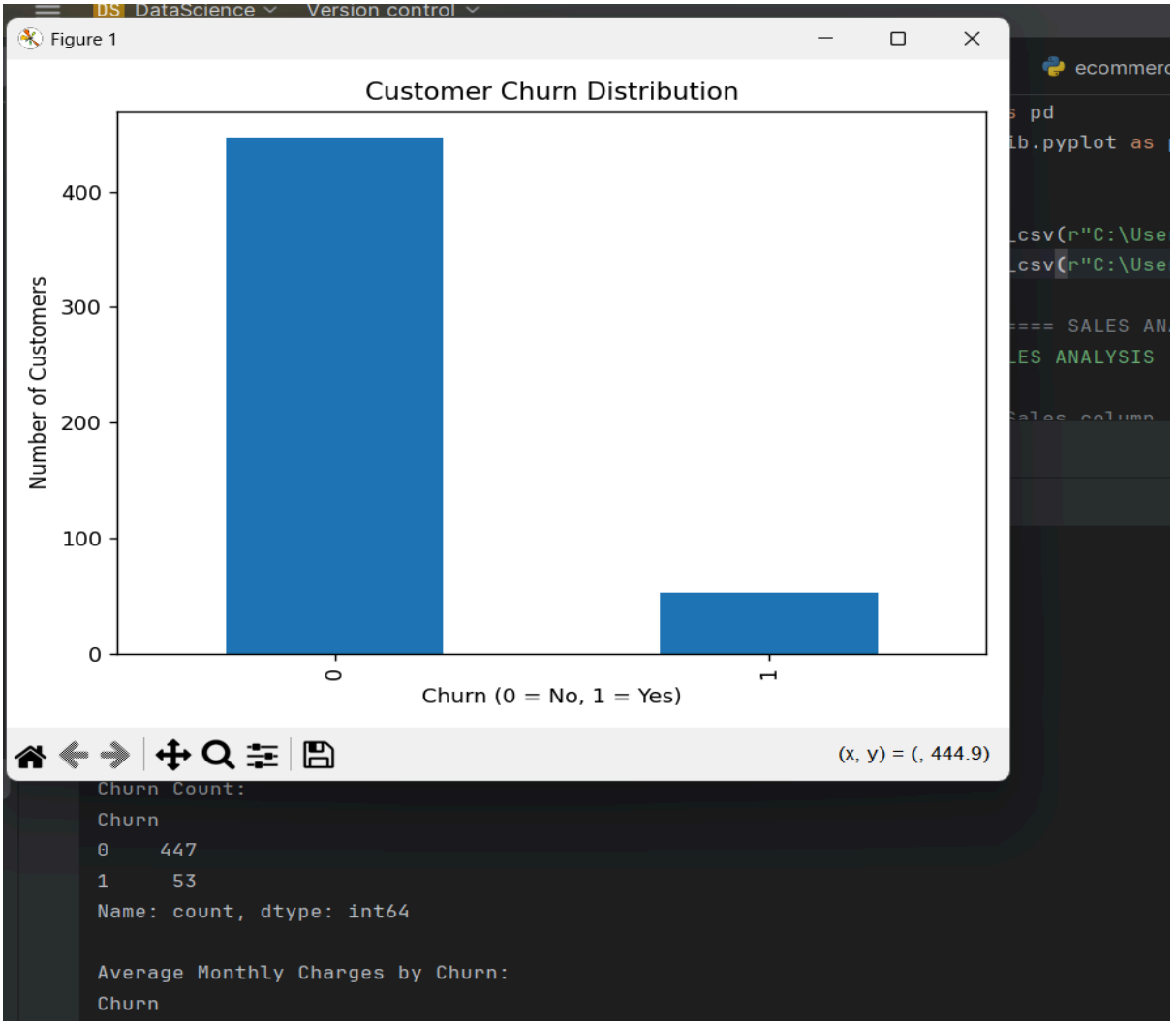
- README.md
  Contains project description, objectives, setup instructions, and usage details.
- customersales.py
  Main file where data is loaded, cleaned, analyzed, and visualized.
- data
  Stores the input datasets used for analysis, such as sales and customer churn data.
- visualizations
  Contains charts and graphs generated during analysis (for example, bar charts).

- report
  Includes the final analysis report in PDF format with insights and conclusions.
- requirements.txt
  Lists all Python libraries required to run the project.

# Visual Documentation

The project includes visual outputs such as:

- Bar chart showing customer churn distribution
- Screenshots of program output
- Saved chart images in the folder




These visuals help in better understanding of data patterns and results.

# Technical Details

**Technologies Used:**

- Python
- Pandas
- Matplotlib

**Techniques Applied:**

- Data loading using CSV files
- Data cleaning and validation
- GroupBy and aggregation operations
- Pivot-style summarization
- Conditional analysis
- Data visualization (bar charts)

**Architecture:**

- Input → Processing → Analysis → Visualization → Report

# Testing Evidence

**Test Cases:**

- Verified column existence before processing
- Handled missing or incorrect column names
- Checked data types before calculations
- Ensured code runs without runtime errors

**Validation:**

- Printed sample rows for verification

- Confirmed correct aggregation results
- Verified visualization output manually