Predictive Analytics for Sales Forecasting - Walmart Dataset

Project Overview:

The goal of this project is to use the Walmart sales data to create a model that predicts future sales. This model can be used to forecast sales and plan inventory levels for different Walmart stores.

Data:

The Walmart sales dataset is available on Kaggle (https://www.kaggle.com/c/walmart-recruiting-store-sales-forecasting/data). The dataset contains historical sales data for 45 Walmart stores located in different regions. The data includes information such as store number, department number, date, weekly sales, and other relevant features.

Responsibilities:

1. Web Developer (HTML, CSS, JavaScript):
   - Develop a user-friendly web interface that allows users to input relevant features (e.g., store number, department number, date) and display the predicted sales based on the model's output.
   - Implement visualization tools (e.g., charts, graphs) to help users understand the predicted sales data.
2. Salesforce Admin:
   - Use Salesforce to manage the data import/export process from the Walmart dataset.
   - Use Salesforce to track the progress of the project and ensure that all data is up-to-date and accurate.
3. Python and SQL Developer:
   - Preprocess and clean the Walmart dataset to ensure that it is ready for use in the predictive model.
   - Train and evaluate different predictive models using Python libraries such as scikit-learn.
   - Use SQL to extract relevant features from the dataset and optimize data storage and retrieval.
4. Tableau Developer:
   - Use Tableau to create interactive visualizations of the Walmart sales data to help stakeholders understand trends and patterns in the data.
   - Implement dashboards that provide a summary of the sales data across different stores and departments.

Starting Points:

1. Web Developer: Start by researching different web frameworks and tools (e.g., React, Angular, Vue.js) that can be used to build the user interface. Consider using libraries like D3.js for visualization.
2. Salesforce Admin: Start by setting up a Salesforce account and exploring its capabilities for data management and collaboration.
3. Python and SQL Developer: Start by familiarizing yourself with Python and SQL basics, and learn how to use libraries like Pandas and NumPy for data manipulation. Consider taking a course or working through tutorials on scikit-learn.
4. Tableau Developer: Start by downloading Tableau and exploring its features and capabilities. Take a course or work through tutorials to learn best practices for data visualization and dashboard design.

Expanding Starting Points with Tutorial Resources:

1. Web Developer:
   - Design and develop a web-based dashboard to display the predicted sales data
   - Create a responsive front-end using HTML, CSS, and JavaScript
   - Use a popular web framework such as React or Vue.js to build the dashboard
   - Integrate the dashboard with the backend APIs provided by the other developers
   - Ensure that the dashboard is user-friendly and visually appealing

   Resources:

   - HTML, CSS, and JavaScript tutorials on W3Schools: https://www.w3schools.com/
   - React documentation: https://reactjs.org/docs/getting-started.html
   - Vue.js documentation: https://vuejs.org/v2/guide/
2. Salesforce Admin:
   - Set up and configure the Salesforce CRM platform to track sales data
   - Build custom objects and fields to store the Walmart sales data
   - Create reports and dashboards in Salesforce to visualize the sales data
   - Integrate Salesforce with the backend APIs provided by the other developers
   - Ensure that the Salesforce setup is secure and meets best practices

   Resources:

   - Salesforce Trailhead: https://trailhead.salesforce.com/en/home
   - Salesforce Administrator Certification Study Guide: https://www.salesforce.com/content/dam/web/en_us/www/documents/certification-guide/salesforce-certified-administrator-study-guide.pdf
3. Python and SQL Developer:
   - Build and maintain the backend APIs to fetch and manipulate the Walmart sales data
   - Use Python to write scripts to preprocess the data and train predictive models
   - Use SQL to create and manage the database for the sales data
   - Implement machine learning algorithms to predict future sales based on historical data
   - Ensure that the APIs are scalable and performant

   Resources:

   - Python documentation: https://docs.python.org/3/
   - SQL tutorials on W3Schools: https://www.w3schools.com/sql/
   - Scikit-learn documentation: https://scikit-learn.org/stable/documentation.html
4. Tableau Developer:
   - Create interactive data visualizations in Tableau to explore the Walmart sales data
   - Develop dashboards that allow users to drill down into the data and identify trends
   - Integrate Tableau with the backend APIs provided by the other developers
   - Ensure that the Tableau visualizations are responsive and optimized for performance

   Resources:

   - Tableau tutorials on Tableau Public: https://public.tableau.com/en-us/s/resources
   - Tableau Community Forums: https://community.tableau.com/s/

- ○ Tableau Public Gallery for inspiration:
  https://public.tableau.com/en-us/gallery/?tab=viz-of-the-day&type=viz-of-the-day

Slide Deck Outline

Slide 1: Project Title and Introduction

- Title: Predictive Analytics for Sales Forecasting

- Introduction: Explain the purpose and goals of the project.

- Example content: "Welcome to our project on Predictive Analytics for Sales Forecasting! The goal of our project is to use data to predict future sales trends for Walmart. By doing so, we can help Walmart make better decisions on inventory management, pricing strategies, and more."

Slide 2: Walmart Dataset Overview

- Explain the Walmart dataset that will be used in the project.

- Example content: "We will be using a dataset from Kaggle that contains Walmart's historical sales data for the past three years. The dataset includes information such as store location, department, weekly sales, and more. This data will be used to train our predictive model."

Slide 3: Web Developer Responsibilities

- Explain the specific responsibilities for the web developer on the project.

- Example content: "As the web developer on this project, your main responsibilities will be to create a web application that will display the predicted sales trends. You will be using HTML, CSS, and JavaScript to create the frontend of the application. Additionally, you will be integrating the application with the backend APIs created by other team members."

Slide 4: Salesforce Admin Responsibilities

- Explain the specific responsibilities for the Salesforce admin on the project.

- Example content: "As the Salesforce admin on this project, your main responsibilities will be to integrate the sales predictions with Walmart's Salesforce CRM. This will involve creating custom objects and fields, as well as writing Apex code to fetch the data from the backend APIs."

Slide 5: Python and SQL Developer Responsibilities

- Explain the specific responsibilities for the Python and SQL developer on the project.

- Example content: "As the Python and SQL developer on this project, your main responsibilities will be to extract and clean the Walmart sales data using Python and SQL. You will also be responsible for training and tuning the predictive model, and exposing the model through a RESTful API."

Slide 6: Tableau Developer Responsibilities

- Explain the specific responsibilities for the Tableau developer on the project.

- Example content: "As the Tableau developer on this project, your main responsibilities will be to create visualizations and dashboards that will display the Walmart sales data and the predicted trends. You will be using Tableau to create interactive charts, maps, and other visualizations that will help Walmart make data-driven decisions."

Slide 7: Overview of Machine Learning and Predictive Modeling

- Provide a high-level overview of machine learning and predictive modeling.

- Example content: "Machine learning is a subset of artificial intelligence that involves training algorithms to learn from data, and make predictions or decisions based on that data. Predictive modeling is a type of machine learning that involves using statistical algorithms to make predictions about future events."

Slide 8: Types of Predictive Models

- Explain the different types of predictive models.

- Example content: "There are several types of predictive models, including regression, classification, clustering, and neural networks. For this project, we will be using a regression model, which involves predicting a continuous numerical value, such as sales revenue."

Slide 9: Data Preprocessing

- Explain the importance of data preprocessing and the steps involved.

- Example content: "Data preprocessing is the process of cleaning and transforming raw data into a format that can be used by a predictive model. This involves steps such as removing missing values, handling outliers, scaling the data, and encoding categorical variables."

Slide 10: Exploring the Walmart Sales Dataset

- Walmart dataset overview

- Attributes of the dataset

- Basic statistics of the dataset

Image/Video Suggestions:

- Add a screenshot of the Walmart dataset from Kaggle

- Provide a brief tutorial on how to explore datasets using Pandas

Slide 11: Predictive Analysis

- What is predictive analysis?

- How predictive analysis helps in sales forecasting?

- Introduction to different predictive algorithms

Image/Video Suggestions:

- Add a chart or graph to show how predictive analysis helps in sales forecasting

- Provide an overview of different predictive algorithms using a video tutorial

Slide 12: The Python and SQL Developer's Responsibility

- Cleaning and preprocessing the dataset

- Feature engineering and selection

- Developing a predictive model

Image/Video Suggestions:

- Add a screenshot of the cleaned dataset

- Provide a tutorial on data cleaning using Pandas and SQL

Slide 13: The Tableau Developer's Responsibility

- Creating a dashboard to visualize the sales forecast

- Dashboard design principles

- Best practices for creating effective dashboards

Image/Video Suggestions:

- Add a screenshot of a Tableau dashboard for sales forecasting

- Provide a video tutorial on how to create a dashboard in Tableau

Slide 14: The Salesforce Admin's Responsibility

- Integrating the sales forecast with Salesforce

- Using the sales forecast in sales planning and budgeting

- Monitoring sales performance against the forecast

Image/Video Suggestions:

- Add a screenshot of Salesforce dashboard for sales forecasting

- Provide a video tutorial on how to integrate Tableau and Salesforce

Slide 15: Next Steps and Conclusion

- Recap of the project and its objectives

- Future enhancements and improvements

- Final thoughts and thanks

Image/Video Suggestions:

- Add a summary slide with a key takeaway or quote

- Provide a video tutorial on how to create a roadmap for future enhancements and improvements.