Project Title	Dominos - Predictive Purchase Order System
Skills take away From This Project	● **Data cleaning and preprocessing** ● **Exploratory data analysis (EDA)** ● **Time series forecasting** ● **Predictive modeling** ● **Business decision making** ● **Real-world application of data science**
Domain	Food Service Industry

Problem Statement:

Dominos wants to optimize the process of ordering ingredients by predicting future sales and creating a purchase order. By accurately forecasting sales, Dominos can ensure that it has the right amount of ingredients in stock, minimizing waste and preventing stockouts. This project aims to leverage historical sales data and ingredient information to develop a predictive model and generate an efficient purchase order system.

Business Use Cases:

Inventory Management: Ensuring optimal stock levels to meet future demand without overstocking.

Cost Reduction: Minimizing waste and reducing costs associated with expired or excess inventory.

Sales Forecasting: Accurately predicting sales trends to inform business strategies and promotions.

Supply Chain Optimization: Streamlining the ordering process to align with predicted sales and avoid disruptions.

Approach:

Data Preprocessing and Exploration

1. **Data Cleaning**: Remove any missing or inconsistent data entries, handle outliers, and format the data appropriately.
2. **Exploratory Data Analysis (EDA)**: Analyze sales trends, seasonality, and patterns in the historical sales data. Visualize the data to identify significant features.

Sales Prediction

3. **Feature Engineering**: Create relevant features from the sales data, such as day of the week, month, promotional periods, and holiday effects.
4. **Model Selection**: Choose an appropriate time series forecasting model (e.g., ARIMA, SARIMA, Prophet, LSTM, Regression Model).
5. **Model Training**: Train the predictive model on the historical sales data.
6. **Model Evaluation**: Use metric Mean Absolute Percentage Error (MAPE) to evaluate model performance.

Purchase Order Generation

7. **Sales Forecasting**: Predict pizza sales for the next one week (your choice of months or weeks) using the trained model.
8. **Ingredient Calculation**: Calculate the required quantities of each ingredient based on the predicted sales and the ingredient dataset.
9. **Purchase Order Creation**: Generate a detailed purchase order listing the quantities of each ingredient needed for the predicted sales period.

Results:

- Accurate sales predictions.
- A comprehensive purchase order detailing the required ingredients for the forecasted sales period.

Technical Tags:

- Data Cleaning
- EDA
- Time Series Forecasting
- ARIMA/SARIMA/Prophet/LSTM/Regression Model

- Predictive Modeling
- Inventory Management
- Python
- Pandas
- Scikit-learn
- Matplotlib/Seaborn

Data Set :

- Dataset Link:
  - [Sales dataset](#)
  - [Ingredients dataset](#)

Data Set Explanation:

Sales Data: Historical sales records (Date, Pizza Type, Quantity Sold, Price, Category, Ingredients)

Ingredient Data: Ingredient requirements for each pizza type (Pizza Type, Ingredient, Quantity Needed)

Project Deliverables & Evaluation metrics:

- Cleaned and preprocessed datasets
- Exploratory Data Analysis report
- Predictive model with code and evaluation metrics
- Detailed purchase order for the next week
- Github repository
- Project report documenting methodology, findings, and business implications

Project Guidelines:

- Follow best coding practices, including clear and consistent naming conventions.
- Use version control (e.g., Git) to manage code changes and collaborate effectively.
- Document all steps clearly in the code and the project report.

- Ensure reproducibility by using a consistent computing environment and dependencies.

References:

- **EDA Guide -** 📄 **Exploratory Data Analysis (EDA) Guide**
- **Project Live Evaluation -** 📄 **Project Live Evaluation**
- **Capstone Explanation Guideline -** 📄 **Capstone Explanation Guideline**
- **Project Orientation Link (Tamil) - Recording link**
- **Project Orientation Link (English) - Recording link**

Timeline - 1 week

PROJECT DOUBT CLARIFICATION SESSION (PROJECT AND CLASS DOUBTS)

About Session: The Project Doubt Clarification Session is a helpful resource for resolving questions and concerns about projects and class topics. It provides support in understanding project requirements, addressing code issues, and clarifying class concepts. The session aims to enhance comprehension and provide guidance to overcome challenges effectively.
Note: Book the slot at least before 12:00 Pm on the same day

Timing: Tuesday, Thursday, Saturday (5:00PM to 7:00PM)

Booking link :https://forms.gle/XC553oSbMJ2Gcfug9

LIVE EVALUATION SESSION (CAPSTONE AND FINAL PROJECT)

About Session: The Live Evaluation Session for Capstone and Final Projects allows participants to showcase their projects and receive real-time feedback for improvement. It assesses project quality and provides an opportunity for discussion and evaluation.
Note: This form will Open on Saturday and Sunday Only on Every Week

Timing: Monday-Saturday (11:30PM to 12:30PM)

Booking link : https://forms.gle/1m2Gsro41fLtZurRA