**Project Overview**

The project should analyse and visualize the sales data from a coffee shop. The goal is to extract meaningful insights and automate the reporting process to track performance metrics and support decision-making.

**Project Outline**

**Data Extraction and Cleaning (Python):**

* Import the sales data from the provided Excel file using pandas.
* Clean the data to handle missing values, inconsistencies, and data type conversions.
* Perform exploratory data analysis (EDA) to gain initial insights into the data and validate assumptions.

**Data Analysis and Preparation (Python):**

* Calculate sales trends over time (daily, weekly, monthly) using pandas datetime functionalities.
* Analyze the busiest days of the week by aggregating transaction data and identifying peak days.
* Determine the best-selling and least frequently sold products, along with their revenue contribution.
* Optionally, perform location-based analysis if the dataset includes location information.
* Evaluate the impact of promotions and discounts on sales performance.

**Visualization Development (Power BI):**

* Export the cleaned and prepared data from Python to a CSV file.
* Open Power BI Desktop and import the CSV file.
* Design interactive dashboards and visualizations to represent the analysed data.
* Create line charts to visualize sales trends over time, bar charts for product analysis, and pie charts for distribution of sales by day of the week.
* Include slicers and filters for user interactivity, allowing stakeholders to explore the data dynamically.

**Automation (Python):**

* Write Python scripts to automate the data extraction, cleaning, and preparation processes.
* Utilize scheduling tools like corn jobs (Linux) or Task Scheduler (Windows) to run these scripts at regular intervals (e.g., daily, weekly).
* Set up automatic data refresh in Power BI to ensure the dashboards are always up to date with the latest data.

**Report Generation and Distribution (Python/Power BI):**

* Develop mechanisms to generate automated reports and alerts for key stakeholders.
* Create downloadable reports summarizing key metrics using Python libraries like Report Lab or generating PDFs directly from Power BI.
* Establish a distribution system to share reports with relevant stakeholders via email or a shared drive.