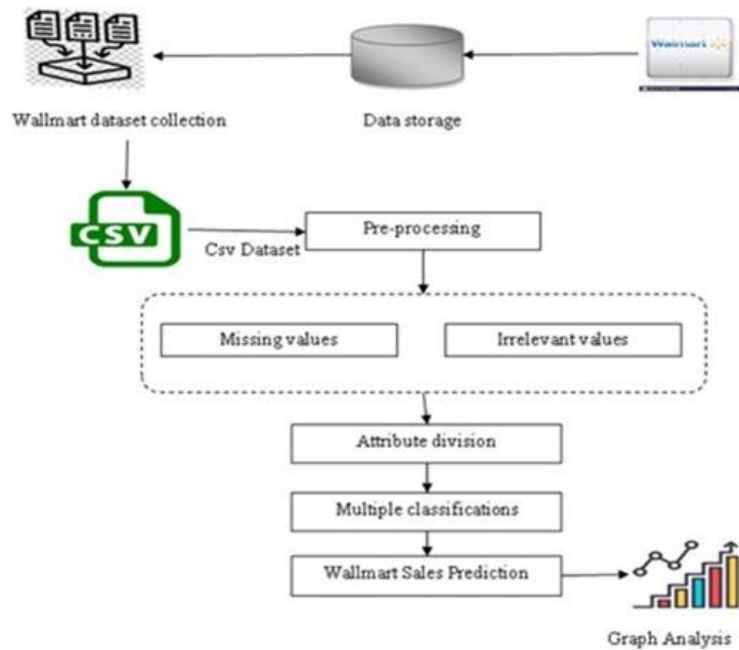


Project Planning Phase
Technology Stack
(Architecture & Stack)

Date	26 October 2023
Team ID	Team-593170
Project Name	Walmart sales analysis for retail Industry with machine learning
Maximum Marks	4 Marks

Technical Architecture:

The Deliverable shall include the architectural diagram as below and the information as per the table1 & table 2



Guidelines:

1. Include all the processes (As an application logic / Technology Block)
2. Provide infrastructural demarcation (Local / Cloud)
3. Indicate external interfaces (third party API's etc.)
4. Indicate Data Storage components / services
5. Indicate interface to machine learning models (if applicable)

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	Data Ingestion	Fetch and store data from various sources.	Cloud-based storage (e.g., AWS S3), Data Ingestion Tools
2.	Data Preprocessing	Clean and prepare data for analysis.	Python (Pandas, NumPy), Data Cleaning Tools
3.	Feature Engineering	Create additional features to improve analysis.	Python (Pandas), Feature Engineering Tools .
4.	Machine Learning Models	Build and train ML models for sales forecasting.	Python (Scikit-Learn, XGBoost, ARIMA), ML Frameworks
5.	Data Storage	Store preprocessed data for easy access	Cloud-based databases (e.g., AWS RDS), Local Databases
6.	Web Application (Flask)	Provide a user interface for accessing forecasts.	Python (Flask), Web Development Tools
7.	Security and Compliance	Ensure the security and compliance of sensitive data, including customer information.	encryption, authentication, and access control measures.
8.	IBM Deployment (Cloud):	Cloud-based infrastructure, such as IBM Cloud, for hosting the Flask application and machine learning models.	IBM Cloud services for hosting and scaling the application.

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Utilize open-source frameworks for development, machine learning, and data analysis.	Python, Scikit-Learn, XGBoost, Flask
2.	Security Implementations	Implement security measures to protect data and user interactions within the application.	SSL/TLS, Encryption, Authentication
3.	Scalable Architecture	Design the architecture to be scalable, allowing the application to handle growing data and user loads.	Cloud Services (e.g., AWS Auto Scaling), Load Balancing

S.No	Characteristics	Description	Technology
4.	Availability	Ensure high availability of the application, minimizing downtime and disruptions	Redundancy, Failover, Monitoring and Alerting
5.	Performance	Optimize application performance for responsiveness and efficient use of resources	Caching, Database Indexing, Efficient Algorithms.