Project Design Phase-II
Technology Stack (Architecture & Stack)

Date	01 November 2023
Team ID	592679
Project Name	Share price estimation of TOP 5 GPU Companies
Maximum Marks	4 Marks

Technical Architecture:

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

Here's the modified response without the stars:

Application Logic / Technology Block:

1. Data Collection and Processing:
- **Process: Gather real-time stock data for the top 5 GPU companies.**
- **Technology: Web scraping or API integration with financial data providers.**

2. Share Price Estimation Algorithm:
- **Process: Develop an algorithm to estimate future share prices based on historical data, market trends, and potentially sentiment analysis.**
- **Technology: Python (for algorithm development), statistical modeling libraries (e.g., pandas, scikit-learn).**

3. User Interface:
- **Process: Display share price estimations to users.**
- **Technology: Web application (HTML, CSS, JavaScript), or a mobile application (React, Flutter, or similar).**

4. User Authentication and Authorization:
- **Process: Ensure secure access to user-specific data.**
- **Technology: OAuth for authentication, JWT (JSON Web Tokens) for authorization.**

Infrastructural Demarcation:

1. Data Collection Infrastructure:
- **Location: Cloud-based (AWS, Google Cloud, or Azure).**
- **Technology: Serverless computing or microservices architecture for scalability.**

2. Application Server:
- **Location: Cloud-based.**
- **Technology: Containerization (Docker), Orchestration (Kubernetes), Web server (Nginx, Apache).**

3. Database:

- Location: Cloud-based (Managed Database Services).
- Technology: PostgreSQL, MongoDB, or other suitable databases.

External Interfaces:

1. Financial Data API:
- Provider: Consider using financial data APIs such as Alpha Vantage, Yahoo Finance, or other reputable providers for real-time and historical stock data.

Data Storage Components / Services:

1. Historical Stock Data Storage:
- Service: Cloud-based Database.
- Technology: Store historical stock data in a structured database for analysis.

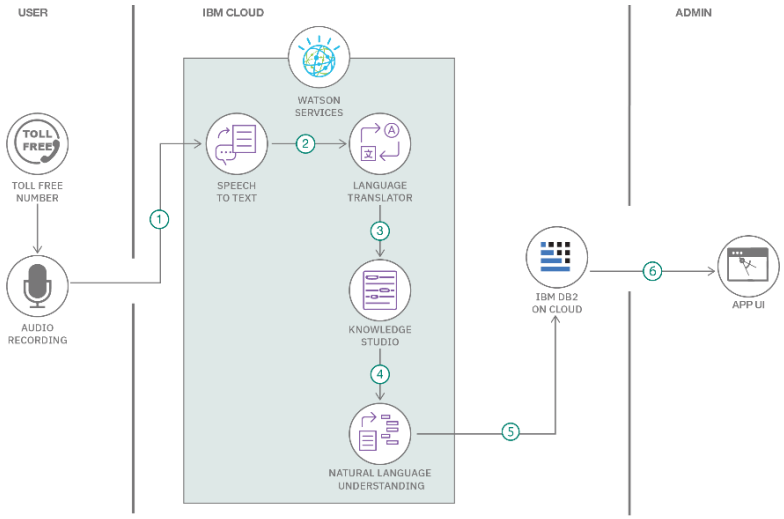
2. User Data Storage:
- Service: Cloud-based Database.
- Technology: Store user-related data securely.

Interface to Machine Learning Models:

1. Machine Learning Models for Estimation:
- Process: Develop, train, and deploy machine learning models for share price estimation.
- Technology: Python, Jupyter Notebooks, frameworks like TensorFlow or PyTorch for model development. Deployment can be done using cloud-based services (AWS Sagemaker, Google AI Platform).

2. Integration with Application:
- Process: Interface the application with the machine learning models to provide real-time estimations.
- Technology: RESTful APIs for communication.

These are general guidelines, and the specifics may vary based on the project's detailed requirements, scale, and budget. Always consider factors like data privacy, security, and compliance with financial regulations in the development process. Additionally, stay informed about the terms of use for third-party APIs to ensure compliance with their policies.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NATURAL LANGUAGE UNDERSTANDING
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Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	How user interacts with application e.g. Web UI, Mobile App, Chatbot etc.	HTML, CSS, JavaScript / Angular Js / React Js etc.
2.	Application Logic-1	Logic for a process in the application	Java / Python
3.	Application Logic-2	Logic for a process in the application	IBM Watson STT service
4.	Application Logic-3	Logic for a process in the application	IBM Watson Assistant
5.	Database	Data Type, Configurations etc.	MySQL, NoSQL, etc.
6.	Cloud Database	Database Service on Cloud	IBM DB2, IBM Cloudant etc.
7.	File Storage	File storage requirements	IBM Block Storage or Other Storage Service or Local Filesystem
8.	External API-1	Purpose of External API used in the application	IBM Weather API, etc.
9.	External API-2	Purpose of External API used in the application	Aadhar API, etc.
10.	Machine Learning Model	Purpose of Machine Learning Model	Object Recognition Model, etc.
11.	Infrastructure (Server / Cloud)	Application Deployment on Local System / Cloud Local Server Configuration: Cloud Server Configuration :	Local, Cloud Foundry, Kubernetes, etc.

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	List the open-source frameworks used	Technology of Opensource framework
2.	Security Implementations	List all the security / access controls implemented, use of firewalls etc.	e.g. SHA-256, Encryptions, IAM Controls, OWASP etc.
3.	Scalable Architecture	Justify the scalability of architecture (3 – tier, Micro-services)	Technology used

S.No	Characteristics	Description	Technology
4.	Availability	Justify the availability of application (e.g. use of load balancers, distributed servers etc.)	Technology used
5.	Performance	Design consideration for the performance of the application (number of requests per sec, use of Cache, use of CDN's) etc.	Technology used

References:

https://c4model.com/

https://developer.ibm.com/patterns/online-order-processing-system-during-pandemic/

https://www.ibm.com/cloud/architecture

https://aws.amazon.com/architecture

https://medium.com/the-internal-startup/how-to-draw-useful-technical-architecture-diagrams-2d20c9fda90d