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

Date	27 October 2023
Team ID	PNT2023TMID 591217
Project Name	Project - Visualizing and Predicting Heart Diseases with An Interactive Dash Board
Maximum Marks	4 Marks

Technical Architecture:

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

Reference: https://developer.ibm.com/patterns/ai-powered-backend-system-for-order-processing-during-pandemics/

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)

Technical Architecture

Visualizing and predicting heart diseases with an interactive dashboard

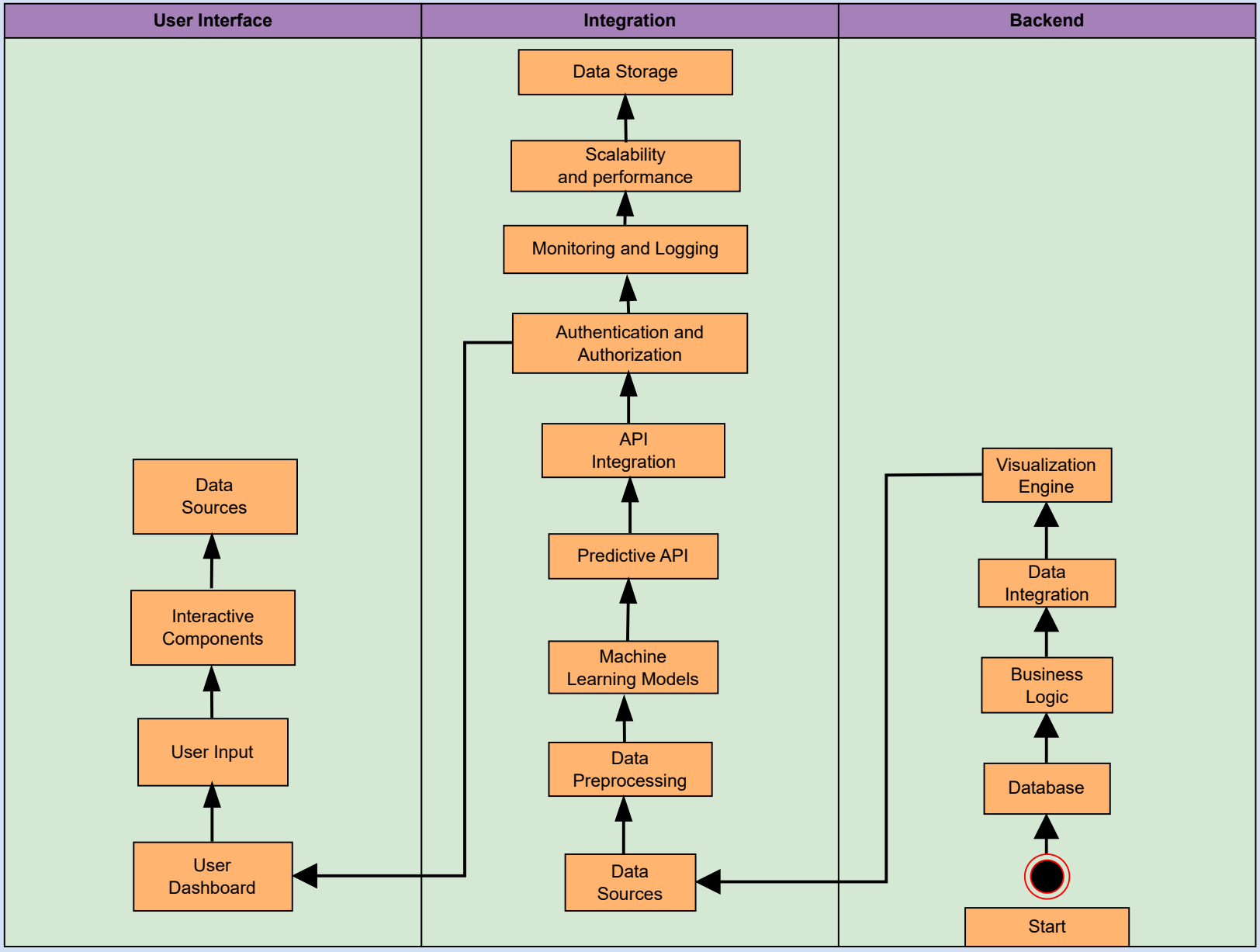

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	Web-based interactive dashboard for user interaction.	HTML, CSS, JavaScript, React.js
2.	Chatbot	User interaction and support through a chatbot.	IBM Watson Assistant
3.	User Interface	user friendly, allowing people to interact with technology easily and intuitively.	VUI (Voice User interface), Augmented reality (AR) and virtual reality (VR) interfaces, User experience (UX) Design tools
4.	File Storage	Storage for medical images and reports.	AWS S3 (Simple Storage Service)
5.	Database	For data storage, data retrieval, data integrity, data security.	MySQL, Microsoft SQL server, Oracle databases, SQLite, MongoDB, Cassandra
6.	Machine Learning model	ML models can be used in Predictive Analytics, anomaly detection and in image and video analysis.	Regression Models (linear and polynomial regression) Clustering models like DBscan used to uncover patterns
7.	Application Logic	Backend logic for data processing and prediction.	Python (Flask)
8.	Speech-to-Text	Service for voice commands and narration.	IBM Watson Speech to Text Service
9.	Cloud Database	Scalable cloud-based database solution.	AWS RDS (Relational Database Service)
10.	External API-1	Integration with weather data for health insights.	IBM Weather API
11.	External API-2	Identity verification for user security.	Aadhar API
12.	Infrastructure	Deployment on either local or cloud servers.	Local Server Configuration: - OS: Linux - Web Server: Nginx Cloud Server Configuration: - Cloud Provider: AWS - Serverless: AWS Lambda

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	User-Friendly	The app is easy to use and understand for everyone.	Responsive Web Design, Usability Testing
2.	Real-Time Data	It shows the most up-to-date heart disease information.	WebSocket for Real-Time Updates
3.	Predictive	It uses smart tools to predict heart disease risks.	Machine Learning Algorithms (e.g., Scikit-learn)
4.	Interactive	Users can play around with the app and customize it as they like.	JavaScript Libraries (e.g., D3.js), Reactivity
5.	Scalable	The app can grow and handle more users and data.	Cloud-Based Hosting (e.g., AWS, Azure), Horizontal Scaling
6.	Secure	It keeps data safe and protects your privacy.	Data Encryption (TLS/SSL), Role-Based Access Control
7.	Integrative	It connects to other apps to get more information.	API Integration (e.g., RESTful)
8.	Robust	The app is strong and does not break easily.	Exception Handling, Redundancy
9.	Performance	It's super-fast and responds quickly to your requests.	Caching, Database Indexing
10.	Accessibility	It's built so that everyone, including people with disabilities, can use it easily.	WCAG (Web Content Accessibility Guidelines)

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