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

Date	03 October 2022
Team ID	PNT2022TMID52665
Project Name	Project - Efficient Water quality analysis & prediction using 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

Efficient Water Quality Analysis & Prediction Using Machine Learning

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)

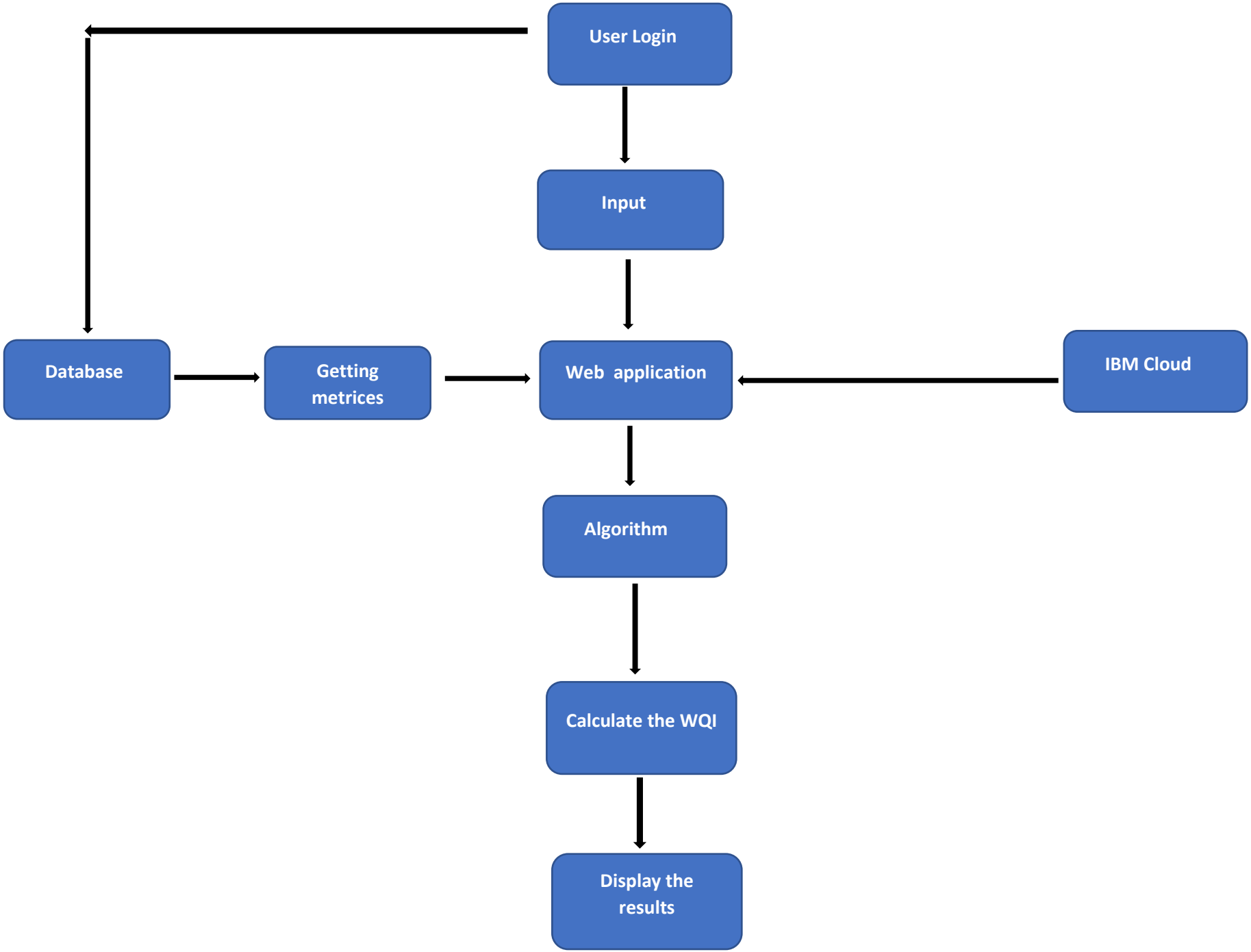
User Login
Input
Database
Getting metrices
Web application
IBM Cloud
Algorithm
Calculate the WQI
Display the results

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.	Input	Input is Obtained. The various metrics like pH, conductivity, temperature are collected	CSV
3.	Prediction	Using the machine learning model we predict the water quality	Python
4.	Display	The quality of water along with the prediction rate is displayed	HTML
5.	Database	Data Type, Configurations etc.	MySQL, NoSQL, etc.
6.	Cloud Database	Database Service on Cloud	IBM DB2, IBM Cloudant etc.
7.	Machine Learning Model	Water quality prediction	SVM, Regression, LSTM
8.	Infrastructure (Server / Cloud)	Application Deployment on Local System / Cloud Local Server Configuration: Local System Cloud Server Configuration : IBM	Local, Cloud Foundry, Kubernetes, etc.

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	H2O, KNIME	Tool integrates components for machine learning and data mining through its modular data pipelining concept.
2.	Security Implementations	To save all the data obtained from user in the database with necessary encryption	e.g. SHA-256, Encryptions, IAM Controls, OWASP etc.
3.	Scalable Architecture	In order to improve security, and to be independent of others	IBM
4.	Availability	To improve the responsiveness and availability of applications for uses	HAProxy

S.No	Characteristics	Description	Technology
5.	Performance	To allow maximum number of people as possible at the same time	CDN, VPS

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