

Project Design Phase-II Technology Architecture

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| Date | 04 NOVEMBER 2022 |
| Team ID | PNT2022TMID25961 |
| Project Name | Project – Real-time River Water Quality Monitoring and Control System |
| Maximum Marks | 4 Marks |

Technical Architecture:

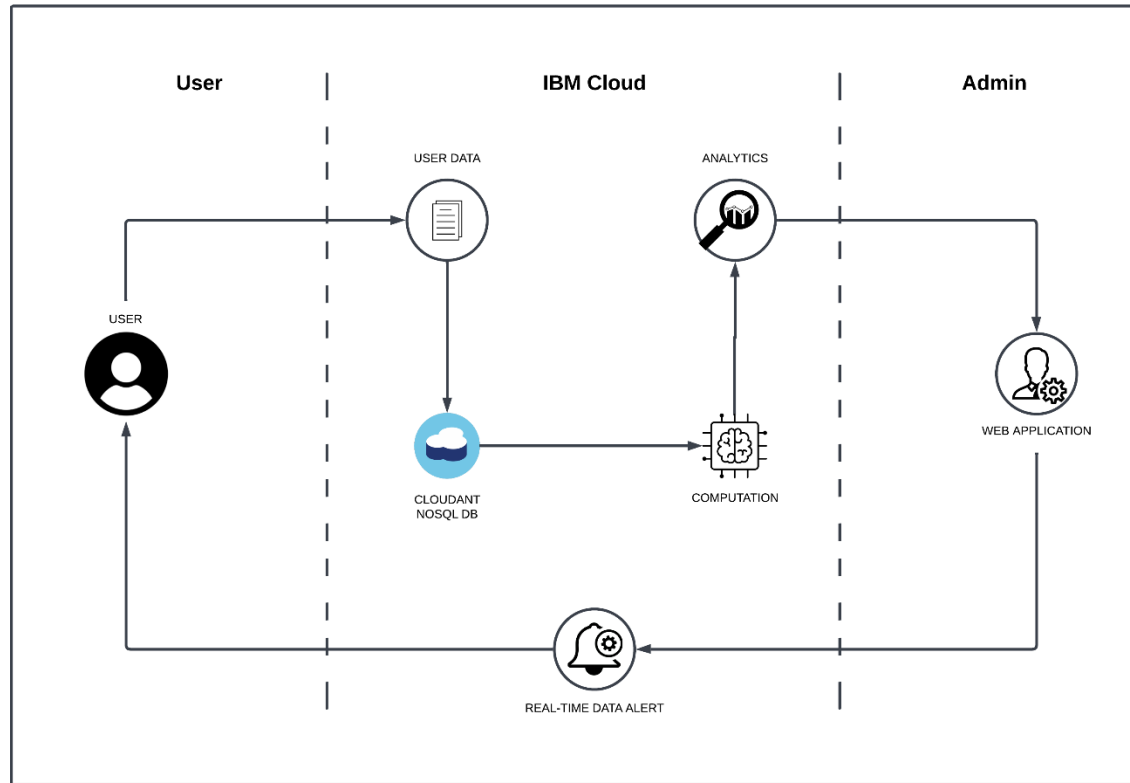


Table-1: Components & Technologies:

| S.No | Component | Description | Technology |
|------|---------------------------------|---|--------------------------------|
| 1. | User Interface | Web UI | HTML, CSS, JavaScript |
| 2. | Application Logic-1 | Web UI to enter the Register/Login | HTML, CSS, JavaScript |
| 3. | Application Logic-2 | Get the river body data from the Cloud | IBM Watson IoT API call data |
| 4. | Application Logic-3 | Set Some threshold values for the data set and alert the user about the abnormalities | IBM Watson Assistant |
| 5. | Database | Dissolved oxygen, pH, Ammonia, Chloride levels | MySQL |
| 6. | Cloud Database | Call the data IBM Cloudant is used and user login credentials | IBM DB2, IBM Cloudant |
| 7. | File Storage | Web UI code and IoT credentials are stored and API keys | IBM Block Storage |
| 8. | External API-1 | To get the user login credentials to find the data they require | IBM Login API |
| 9. | External API-2 | To get the data set of the water quality monitored by the sensor network | Monitoring API |
| 10. | Machine Learning Model | Convert data into analytic graph | Numeric data to graphical data |
| 11. | Infrastructure (Server / Cloud) | To host the server and web app | Cloud Foundry, Node Red |

Table-2: Application Characteristics:

| S.No | Characteristics | Description | Technology |
|------|--------------------------|--|------------------|
| 1. | Open-Source Frameworks | To develop the application interface, we use MIT App Inventor | MIT App Inventor |
| 2. | Security Implementations | To secure the login credentials and personal information | SHA-256, OWASP |
| 3. | Scalable Architecture | To scale the application database | IBM Auto Scaling |

| S.No | Characteristics | Description | Technology |
|------|-----------------|--|-------------------------|
| 4. | Availability | To make data available 24/7 | IBM cloud load balancer |
| 5. | Performance | To increase the performance the application in hosted in the high-performance instance | IBM Instance |