**Project Design Phase-II**

**Technology Architecture**

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| **Date :** | **09 NOVEMBER 2022** |
| **Project Name :** | **Smart Solutions For Railways** |
| **Team ID :** | **PNT2022TMID36774** |
| **Maximum Marks** **:** | **4 Marks** |

**Technical Architecture:**

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|  | |  | | --- | | Guidelines:     1. Using the Web application, a user books a ticket based on the availability of the seats by giving the general required information. 2. Once a user clicks on the submit button, a QR code is generated with a Unique ID and the data is stored in the Cloudant DB with that Unique ID. 3. Users can save the QR code for further process. 4. In python code, a Ticket collector can scan the QR code and extract the information from the QR Code i.e., Unique ID. With that Unique ID, data is fetched from the Cloudant DB, if it is not found, then it displays Not a Valid Ticket. 5. Also, the live location of the train will be published to IBM IoT platform using python code 6. The train location can be tracked from a Web Application. | |

**Table-1 : Components & Technologies:**

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| --- | --- | --- | --- |
| **S.No** | **Component** | **Description** | **Technology** |
| 1. | IoT Device | How user interacts with application | Cloud technology |
| 2. | Python code | python code for publishing the location (latitude and longitude) data to the IBM IoT Platform and the other python code to read the QR Code and fetch the data from Cloudant DB. | Python |
| 3. | IBM Watson IoT Platform | IBM Watson IoT platform acts as the mediator to connect the web application to IoT device, so create the IBM Watson IoT platform. | Analytics and information retrival |
| 4. | Node Red | Connect to IBM IoT platform and get the location, store the data in Cloudant DB. | Java script , cloud technology |
| 5. | Database | Data Type, Configurations etc. | MySQL, NoSQL, etc. |
| 6. | Cloud Database | Database Service on Cloud | IBM DB2, IBM Cloudant etc. |
| 7. | Web UI | we get the expected output by providing the desired user input where the QR Code is generated and the same data is stored in the form of json in Cloudant DB. | python |
| 8. | Fast SMS | To confirm ticket booking | python |
| 9. | user | Take user input (Basic Information) for booking a seat on the train | Python |

**Table-2: Application Characteristics:**

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| --- | --- | --- | --- |
| **S.No** | **Characteristics** | **Description** | **Technology** |
| 1. | Usability | User can use the Web application to book tickets and can check the status of the trains. | QR code |
| 2. | Security | The user details are stored in the cloud with high encryption and these details are non-shareable. | Encryptions, QR code |
| 3. | Reliability | The confirmation of the tickets will be sent immediately to the user after the confirmation of payment. The payment details of the users are also well secured and confirm payment through OTP. | IBM Watson IoT Platform, Node Red |
| 4. | Availability | The Web application will be available for all the users to book tickets and all the boarding details of the users are also available in the web application. Users can also check the availability of the trains through the Web application. | IBM Watson IoT Platform, Node Red |
| 5. | Performance | Everything will be done quickly. Since it is online booking, Users can book their tickets comfortably in their places without going to railway station | IBM Watson IoT Platform, Node Red |
| 6. | Scalability | This idea can also be upgraded by adding some additional features in the future. | IBM Watson IoT Platform, Node Red |