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

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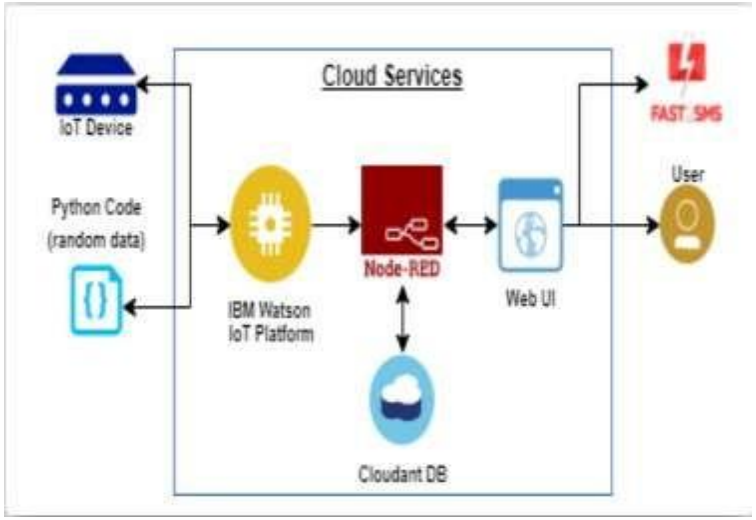
Technical Architecture:



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:

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:

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