Project Design Phase-I

Technology Architecture

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Team ID	PNT2022TMID32983
Project Name	Project – Smart Solutions For Railways
Maximum Marks	4 Marks

Technical Architecture

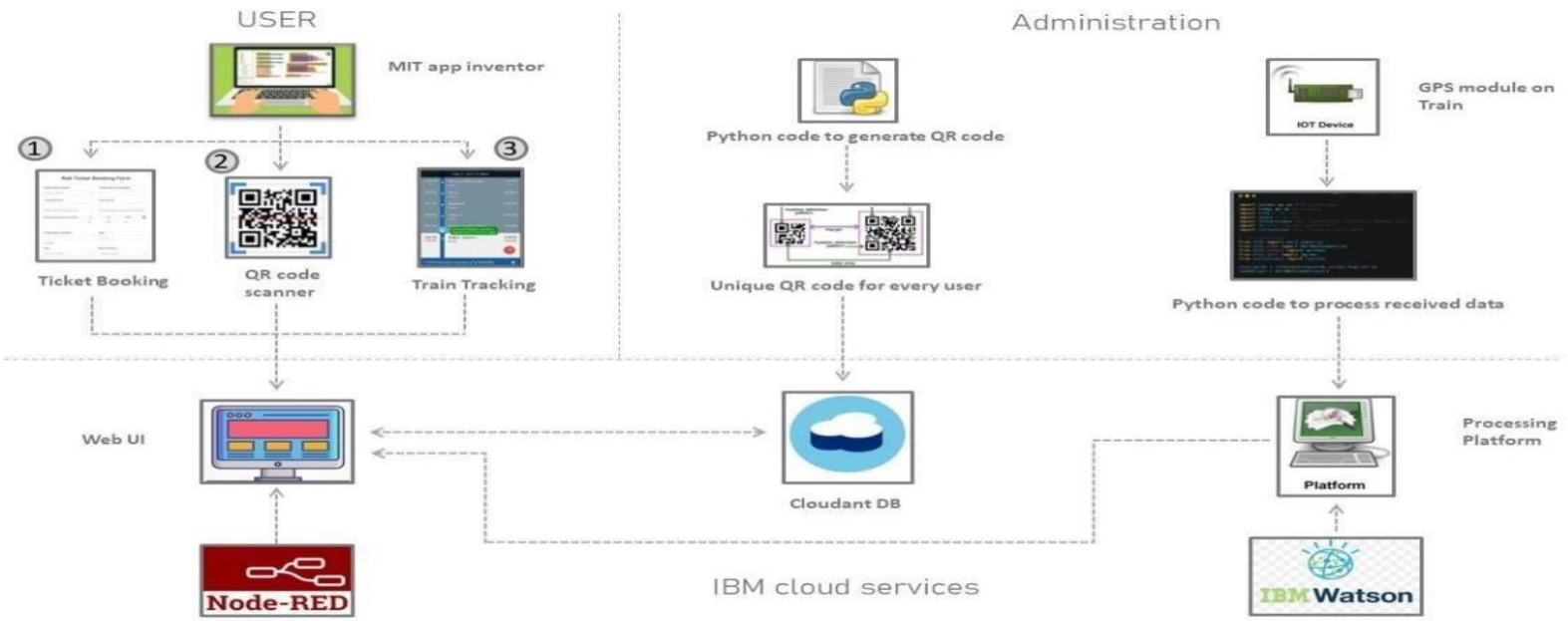

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	User(Passenger or TTE) opens the website which is an application.	MIT app inventor
2.	Application Logic-1	Login as a passenger and book a ticket.	Web UI using Node RED service
3.	Application Logic-2	Login as a passenger and track the live status of a train.	Web UI using Node RED service
4.	Application Logic-3	Login as TTE and scan a QR code to verify a ticket	Web UI using Node RED service

5.	QR code generator	A unique QR code is generated for booking each ticket and is stored in cloud database.	Python
6.	Cloud Database	Database Service on Cloud to store passenger details and generated QR codes.	IBM Cloudant
7.	IoT device(GPS module)	Fixed on the train to track the current location	Python
8.	Processing Platform	Processes the data obtained from IoT device and displays it on Web UI	IBM Watson platform

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Node RED , python 3.7 , cloudant DB	Javascript, NoSQL , DBaaS
2.	Security Implementations	All services include network and storage encryption, security information and event management.	IBM QRadar, OWASP.

3.	Scalable Architecture	3- tier , microservices architecture and SAA	IBM cloud and Watson services
4.	Availability	Use of load balancers, distributed cloud network	IBM-VPC Load balancers, IBM power system Virtual server
5.	Performance	Number of requests per sec is 5, use of cache to store static files .	IBM cloud and Watson services.