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

Technical Architecture:

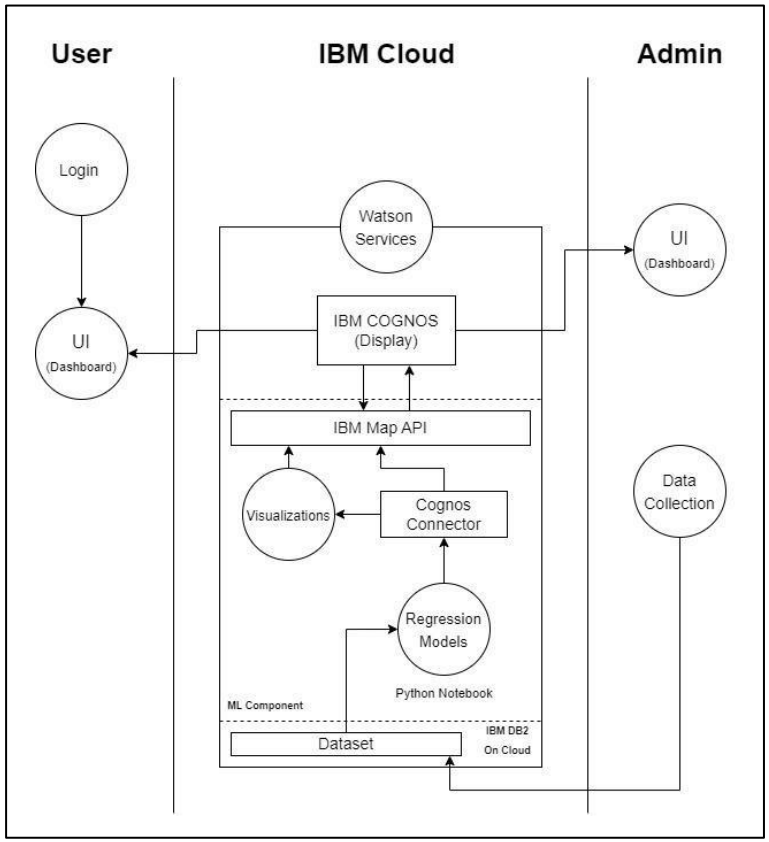

Table-1 : Components & Technologies:

S.No	Component	Description	Technology

1.	User Interface - 1	1. Display results of analysis as visualizations to user 2. Display insights obtained after data analysis	HTML, CSS, JavaScript, React JS, IBM Cognos, etc.
2.	Application Logic-1	Logic for a process in the application	Java / Python
3.	Database	To store the memory intensive Citi bike dataset	MySQL, MongoDB, etc.
4.	Cloud Database	To store the memory intensive Citi bike dataset on Cloud	IBM DB2, IBM Cloudant etc.
5.	File Storage	File storage requirements	IBM Block Storage or Other Storage Service or Local Filesystem
6.	External API-1	To obtain geospatial information of Citi bike in NYC and map it	IBM Map API
7.	External API-2	To perform analysis	Google Colab, Jupyter Notebook
8.	Machine Learning Model	1. To help predict results / values for new incoming data 2. To plot graphs based on dataset	Regression Models
9.	Infrastructure (Server / Cloud)	Application Deployment on Local System / Cloud Local Server Configuration: Local Server (localhost) Cloud Server Configuration : IBM Cloud	Local, Cloud Foundry, Kubernetes, etc.

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Security Implementations	Encrypting login credentials of users	e.g. SHA-256, Encryptions, IAM Controls, OWASP etc.
2.	Scalable Architecture	Each IBM Cognos BI server contains a dispatcher that runs the IBM Cognos BI presentation service, batch report and report services, job and schedule monitor service, and log service.	IBM Cognos BI Server scalability
3.	Availability	All Web communication in IBM Cognos BI is through an IBM Cognos BI gateway installed on a Web server. Each gateway can communicate with a single dispatcher in the applications tier. The IBM Cognos Business Intelligence server contains Content Manager to store and manage information, and a dispatcher to start IBM Cognos services and route requests. Content Manager writes to the content store RDBMS using proper relational transactions. Standard DB tools can be used for backing up and restoring the content store.	IBM Cognos BI gateway, dispatchers, etc.
4.	Performance	Size of data to be analysed is very large	IBM Cognos content store