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

Date	03 October 2022
Team ID	PNT2022TMID53287
Project Name	Project – Smart Lender-Loan Credibility Approval
Maximum Marks	4 Marks

Technical Architecture:

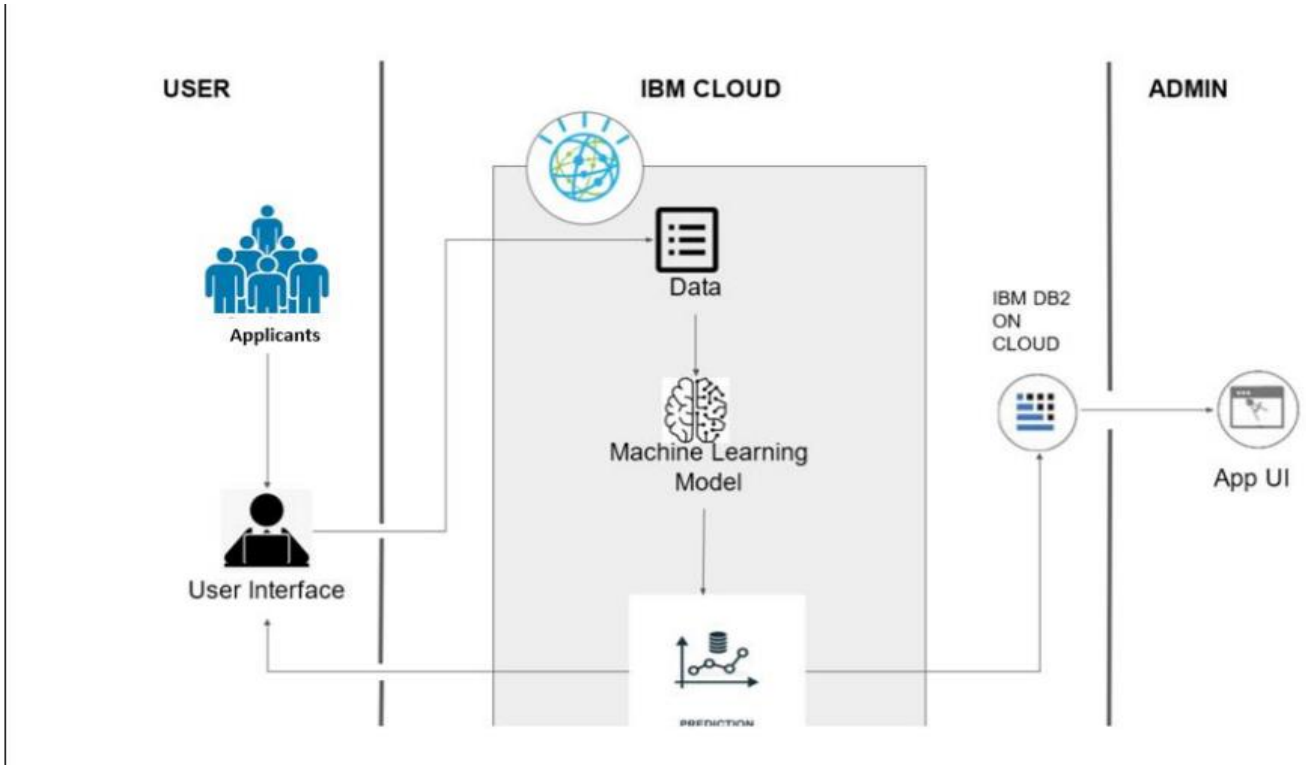

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	Users will be able to register, login and use the functionalities available to them via a web user interface.	HTML, CSS, JavaScript / Angular Js / React Js etc.
2.	Application Logic-1	The user / Applicant can enter the data / information in the form ,which is displayed using the flask and it is sent for the machine learning model for the prediction	Python/HTML
3.	Application Logic-2	The application is deployed using IBM cloud service	IBM Waston Assistance
4.	Database	The user credentials are stored ,which is used to send notification of any updates.	MySQL/SqlServer
5.	Cloud Database	Database Service on Cloud	IBM DB2, IBM Cloudant etc.
6.	File Storage	ML model and training/testing data have to be stored in a file storage.	IBM Block Storage or Other Storage Service or Local Filesystem
7.	Machine Learning Model	Machine Learning Models are used to predict the credibility of the applicant based on the several inputs provided by the user. thus performing binary classification-eligible or not for a particular prosposed amount of loan	KNN,K Means,Random Forest,Decision Trees,Ensemble Learning Methods are implemented using various python open source frameworks
8.	Infrastructure (Server / Cloud)	Application Deployment on Local System / Cloud Local Server Configuration, Cloud Server Configuration	Local, Cloud Foundry, Kubernetes, etc.

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Flask is used to connect the front end with the backend.Other open-source python frameworks like scikit,numpy,tensorflow,keras are used in training and testing the model. Angular, express, bootstrap are a few open source frameworks for web development.	Flask,scikit,tensorflow,keras,express,bootstrap angular
2.	Security Implementations	OpenSSL is a program library that supports many different cryptographic operations, including symmetric key encryption,Public/private key pair generation,Public key encryption and Hash functions.Firewalls,authentication and authorization are also of utmost importance to maintain security.It can be achieved by using SHA algorithm.Role based access control must be provided.	e.g. SHA-256, Encryptions, IAM Controls, OWASP etc.
3.	Scalable Architecture	Horizontal scaling is provided by adding more machines to the pool of servers. Vertical scaling is achieved by adding more CPU and RAM to the existing machines.All modules must be implemented by using the microservices approach and must be deployed in docker containers.	Docker,Micro-services(Nodejs,Angular)
4.	Availability	By following the distributed computing approach and decentralized storing of data availability of the application can be ensured.A back up server must be maintained to perform hot swap if necessary.Data must be replicated across machines.Application must be stored in the form of containers which automatically takes care of the load balancing.	Docker,Kubernetes,IBM cloud file storage,SQL online
5.	Performance	The landing page supporting a number of users (max 5000) per hour must provide 6 second or	APM technology

S.No	Characteristics	Description	Technology
		less response time in a Chrome desktop browser, including the rendering of text and images and over an LTE connection.User’s data must be stored in a cache to retrieve it quickly.	