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

Date	13 October 2022
Team ID	PNT2022TMID53417
Project Name	Project - Early Detection of Chronic Kidney Disease using Machine Learning
Maximum Marks	4 Marks

Technical Architecture:

The Deliverable shall include the architectural diagram as below and the information as per the table1 & table 2

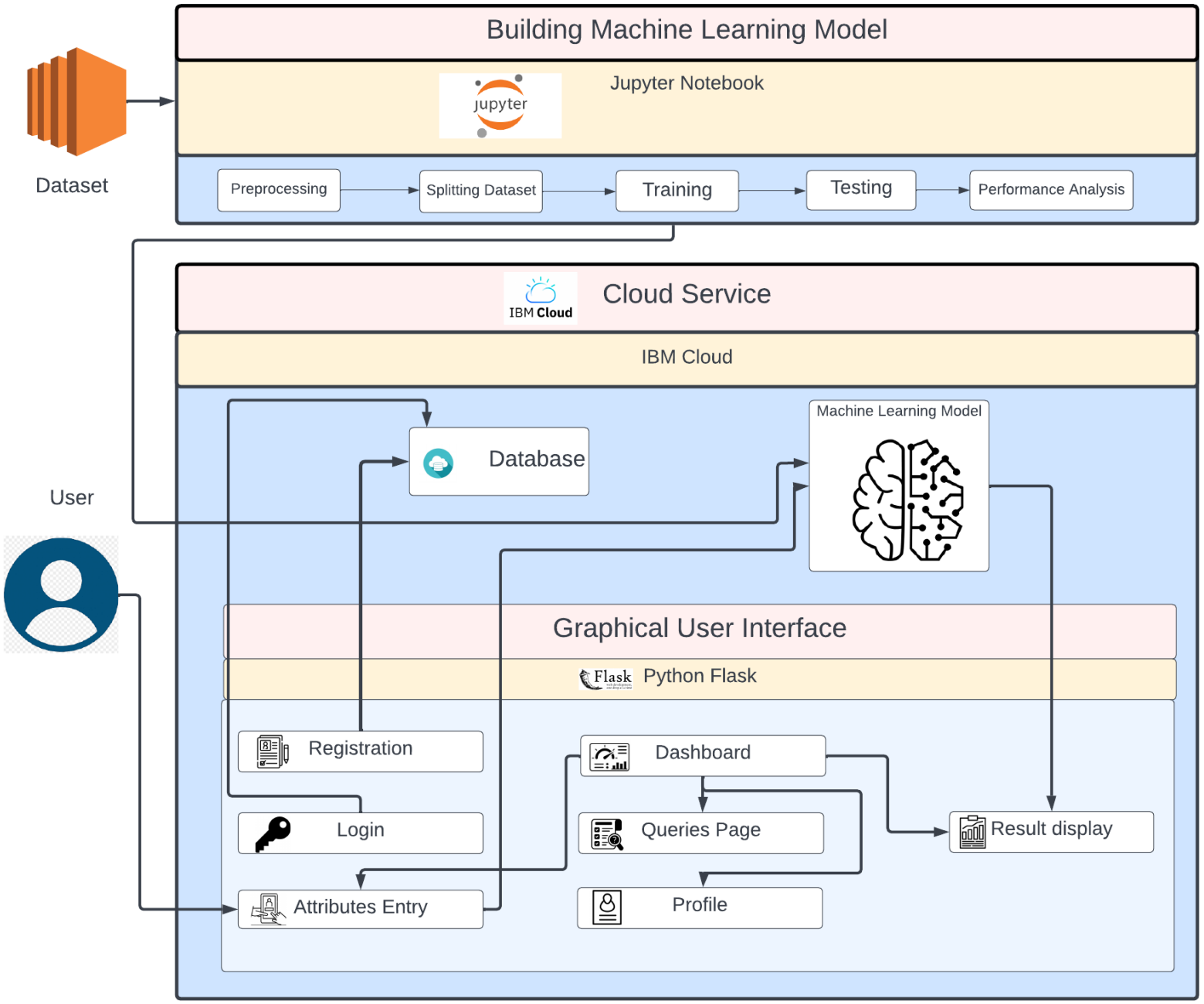
Building Machine Learning Model
Jupyter Notebook
jupyter
Dataset
Preprocessing
Splitting Dataset
Training
Testing
Performance Analysis
Cloud Service
IBM Cloud
IBM Cloud
Database
Machine Learning Model
User
Graphical User Interface
Flask
Python Flask
Registration
Dashboard
Login
Queries Page
Result display
Attributes Entry
Profile

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	User interacts with the system through a web User Interface	Flask
2.	Building Model	Pre-process the dataset, train model using the dataset, test the model for required performance metrics.	Python, Flask, Numpy, Scikit-learn
3.	Navigation within Web UI	All the available features can be accessed from the dashboard	Flask
4.	Cloud Database	Database Service on Cloud	IBM DB2
5.	File Storage	Model weights, User details	IBM Block Storage
6.	External API	Login through Google Account	Google API
7.	Ensemble Model	To Detect Chronic Kidney Disease using Machine Learning	Disease Prediction
8.	Cloud Infrastructure	Cloud Server Configuration	Cloud Foundry

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Python, Cloud Database, Hosting, File Storage	Python, Flask, Numpy, Scikit-learn, Cloud Foundry
2.	Security Implementations	User data encryption and Encryption of the dataflow	SHA-256, MD5
3.	Scalable Architecture	The proposed architecture is a 3-tier architecture with a separate user interface, application tier and data tier	IBM Watson Studio
4.	Availability	Cloud based service	IBM Cloud
5.	Performance	Protection from DDoS attacks, data theft and bot attacks which can affect the performance	IBM Cloud Internet Services