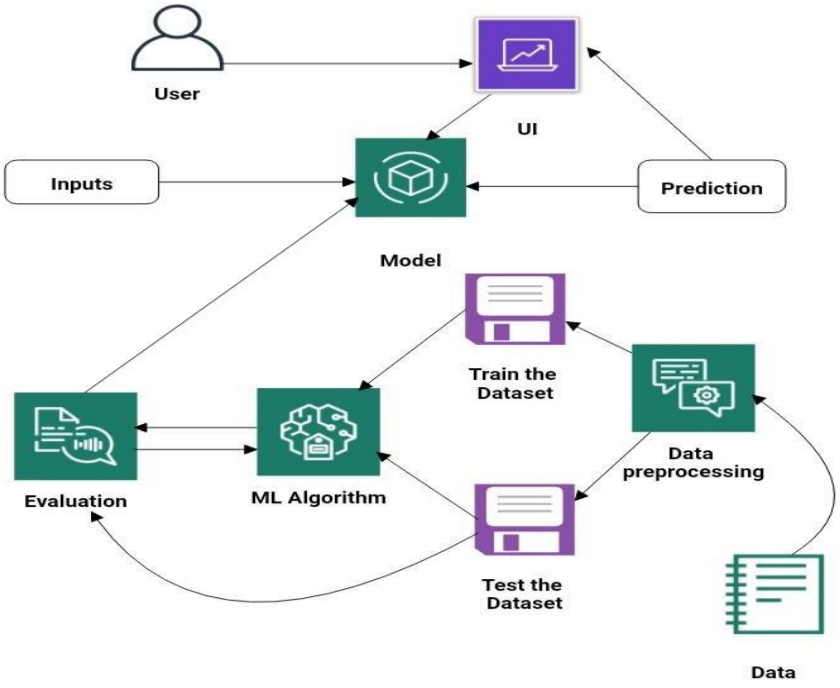
Project Design Phase-II
Technology Stack (Architecture & Stack)

Date	15 October 2022
Team ID	PNT2022TMID13671
Project Name	Crude Oil Price Prediction
Maximum Marks	4 Marks

Technical Architecture:



- Dataset is split into train and test datasets.
- Then, the training data is inputed LSTM model, and the model parameters are adjusted to achieve the optimal training model.
- The aim of this dataset and work is to predict future Crude Oil Prices based on the historical data available in the dataset.
- A comprehensive crude oil evaluation based on a detailed analysis is necessary to determine the value of these crude oils to the refinery.
- Once an ML algorithm is trained on a particular dataset and if you test it on the same dataset, it's more likely to have high accuracy because the model knows what to expect.
- User can know predicted price through the user interface.

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	User interacts with the application using website UI, which is used to get the various user needed various user information details from the website UI	HTML, CSS, JavaScript.
2.	Application Logic-1	This logic depends on the extracting the needed contents into the dataset.	Python
3.	Application Logic-2	This logic depends on the training the dataset to get the accuracy by predicting the value.	Anaconda Jupyter or Google colab.
4.	Database	Dataset is download , loaded and split into taining and testing	Anaconda Jupyter
5.	Cloud Database	Database Service on Cloud	IBM cloud,IBM Watson studio
6.	File Storage	Massive amounts of data that the cloud environment must process in real time and store for later use.	IBM Block Storage or Other Storage Service or Local Filesystem
7.	Machine Learning Model	It allows the user to feed a computer algorithm an immense amount of data and have the computer analyse and make data-driven recommendations and decisions based on only the input data.	Long Short Term Memory(LSTM)
8.	Infrastructure (Server / Cloud)	Application Deployment on Local System / Cloud Local Server Configuration: Google server (Collab)	Local, Cloud Foundry.

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	A software for which the original source code is made freely available and may be redistributed and modified according to the requirement of the user.	Python, Google colab, Anaconda Jupyter.
2.	Security Implementations	IBM Watson studio Application Firewall provides security features that are in addition to many of the components identified in the recommended security framework. Firewall architecture is based on a shared library that can be easily updated when new security threats are identified.	Encryptions, Data isolation,Data protection,Transport layer security (TLS)protocol.
3.	Scalable Architecture	Python is one of the pioneers of programming languages that developers can use to do all the scaling work. To improve scalability, you can enable or disable services run by the dispatcher on individual servers to balance the load for a given computer by request type.	Technology used in the architecture is that with the Python and the IBM Watson studio.
4.	Availability	Availability is the ability of a system to withstand or recover from exceptional situations, such as a computer failure. The **Jupyter** Notebook is a web-based interactive computing platform. The notebook combines live code, equations, narrative text, visualizations, etc.	Technology used in the architecture is that with the Python and the IBM watson studio.
5.	Performance	This is a fundamental step if we need to achieve the greatest benefit with the least amount of work. Designing for capacity means determining the hardware needed for your system to perform well under its anticipated workload.	Technology used in the architecture is that with the Python and the IBM Watson studio.