**STOCK PRICE PREDICTION**

*Problem definition :*

* A problem definition, often referred to as a problem statement or project scope, is a clear and concise description of a particular issue or challenge that needs to be addressed. It serves as a foundational document for problem-solving and decision-making processes in various fields, including business, research, engineering, and more.
* The problem is to build a predictive model that forecast stock prices based on historical market data .The Goal Is to create a tool that assists investors making well informed decisions and optimizing their investment strategies.
* A well-crafted problem definition is a critical first step in problem-solving because it helps clarify the problem, align stakeholders' expectations, and guide the development of solutions or strategies. It serves as a roadmap for the entire problem-solving process, from problem analysis and solution design to implementation and evaluation

*Design Thinking* :

1.**Data collection** : Data collection is the process of gathering, recording, and storing information or data from various sources for the purpose of analysis, research, decision-making, or other relevant objectives. Effective data collection is a crucial step in many fields, including business, science, healthcare, social sciences, and more.

* Effective data collection is essential for making informed decisions, conducting research, solving problems, and gaining insights into various aspects of a project or organization. Careful planning and attention to detail are key to collecting high-quality data that can lead to valuable insights and actionable results.

2.**DATA PREPROCESSING** :Data preprocessing is a crucial step in the data analysis and machine learning pipeline. It involves cleaning, transforming, and organizing raw data into a format suitable for analysis or for training machine learning models. Proper data preprocessing helps improve the quality of the data, reduces noise, and ensures that the data is in a form that can be effectively used for modeling and analysis.

* Data preprocessing is an iterative process, and it may involve several rounds of cleaning, transforming, and exploring the data before it is ready for analysis or machine learning. Proper data preprocessing is essential for building accurate and reliable models and for obtaining meaningful insights from data analysis.

3.**FEATURE ENGINEERING** : Feature engineering is a critical step in the process of preparing data for machine learning models. It involves creating new features or modifying existing ones to improve the performance of a machine learning algorithm. Feature engineering requires domain knowledge and creativity and can have a significant impact on the quality and effectiveness of a model.

* Feature engineering is both an art and a science, and it often involves experimentation and iteration. The goal is to create a set of informative features that capture the underlying patterns in the data, improve model performance, and facilitate the learning process for machine learning algorithms.

4.**MODEL SELECTION** : Model selection is a crucial step in the machine learning pipeline where you choose the best algorithm or model for your specific problem. Selecting the right model can significantly impact the performance and accuracy of your predictions.

* Model selection is an iterative process that may involve trying different algorithms, tuning hyperparameters, and validating the chosen model thoroughly. The goal is to select a model that generalizes well to unseen data and aligns with the objectives and requirements of the problem at hand.

5.**MODEL TRAINING** : Model training is a fundamental step in machine learning where a mathematical model, often referred to as a machine learning algorithm, is trained on a dataset to learn patterns, relationships, or rules that enable it to make predictions, classifications, or decisions.

* Model training is an iterative and often resource-intensive process. It requires careful experimentation, fine-tuning, and validation to ensure that the resulting model performs well in practice and aligns with the problem-solving objectives.

6.**EVALUATION** : Evaluation is a critical step in the machine learning and data analysis pipeline. It involves assessing the performance of a trained model or the quality of analytical results to determine how well they meet the objectives and requirements of the problem at hand. Evaluation is essential for ensuring that the model or analysis is reliable, accurate, and suitable for its intended purpose.

* Evaluation is an ongoing process that helps you ensure the reliability and effectiveness of your models or analytical solutions. It is a critical step in the machine learning and data analysis lifecycle that guides decision-making and drives improvements in model performance and analytical insights.

*FLOWCHART:*

