Title:

Stock Price Prediction (Learning Summary)

Project Overview

This project aimed to predict the next day's closing price of a stock using historical data.
Using the yfinance API, I fetched real-world stock data (Apple Inc.) and built a regression model to estimate future closing prices based on key features like Open, High, Low, and Volume.

Tools and Libraries Used

- **Google Colab:** for writing and running Python code online
- **yfinance:** to fetch historical stock data from Yahoo Finance
- **Pandas:** to clean and structure the dataset
- **scikit-learn:** to train machine learning models (Random Forest & Linear Regression)
- **Matplotlib:** to plot actual vs predicted prices

Steps Followed

1. Fetched stock data using yfinance for Apple (AAPL).
2. Prepared features (Open, High, Low, Volume) and created the target (next day's Close).
3. Split the data into training and testing sets.
4. Trained a Random Forest Regressor model to learn from historical patterns.
5. Predicted the next day's closing prices on unseen test data.
6. Plotted a comparison of actual vs predicted prices using matplotlib.
7. Calculated model performance using Mean Squared Error (MSE).

Key Learnings

- Learned how to handle time series stock data.
- Practiced regression modeling for short-term predictions.
- Understood the use of features like Open, High, Low, and Volume in forecasting prices.
- Improved skills in data visualization and evaluation of model accuracy.

- Gained hands-on experience with Random Forest and Linear Regression.
- Got comfortable using real-world APIs (yfinance) to fetch up-to-date financial data.

Conclusion

This project helped me build confidence in working with financial datasets and applying machine learning for predictive tasks. While no model can fully predict stock prices due to market volatility, this exercise was a valuable introduction to data-driven forecasting techniques.