Project Statement

Domain: Data Analytics

Project 4: Long-Term Stock Prediction Model
Project Title: Long-Term Stock Price Prediction using Financial and Market Indicators

Project Objective:
The goal of this project is to develop a machine learning model that predicts the long-term stock price trends of a company by combining historical stock data (Open, High, Low, Close, Volume) with fundamental financial indicators (EPS, Revenue, ROE, P/E ratio). The model will help investors understand long-term growth potential rather than short-term volatility.

Technologies to Use:

- Python used for data manipulation, analysis, and visualization.
- Libraries: pandas, numpy, matplotlib, seaborn, scikit-learn, statsmodels, tensorflow
- Google Colab (Recommended) cloud-based platform ideal for beginners and collaborative work.

Tasks:

- Import and clean the stock dataset.
- Convert Date column to datetime and sort data.
- Handle missing values and normalize features.
- Create technical indicators (MA, RSI, MACD, Bollinger Bands).
- Merge financial indicators (EPS, Revenue, ROE, P/E) with stock data.
- Perform exploratory data analysis (plots, correlations, trends).
- Engineer lag features and rolling averages for time series.
- Split dataset into training, validation, and test sets.
- Train baseline models (Linear Regression, Random Forest).
- Build and train LSTM/GRU deep learning model for long-term prediction.
- Evaluate model using RMSE, MAPE, and R^2 metrics.
- Visualize predicted vs actual stock price trends.
- Forecast future stock prices (6 months – 5 years horizon).
- Interpret financial indicators' influence on predictions.
- Deploy model using Streamlit/Flask for user-friendly interface.

Submission:
Submit the project folder in ZIP file, including .ipynb notebook file or .py script file. The ZIP will includes all files that used to create the project and Project Report PDF file with graphs and charts.