**Stock Market Tracker - Project Report**

**1. Introduction** The Stock Market Tracker is a full-stack web application designed to provide real-time stock market data, allowing users to track stock prices, analyze trends, and manage their portfolio. The project is developed using the MEAN (MongoDB, Express.js, Angular, Node.js) stack, offering a seamless user experience with dynamic data updates.

**2. Objectives**

* Provide real-time stock price updates.
* Enable users to search and track stocks.
* Visualize stock trends through charts and graphs.
* Allow users to create and manage a personal portfolio.
* Ensure a responsive and user-friendly interface.

**3. Technologies Used**

* **Frontend:** Angular (for dynamic UI)
* **Backend:** Node.js with Express.js (for API handling)
* **Database:** MongoDB (for storing user portfolios and stock data)
* **API Integration:** Stock market data fetched from third-party APIs (e.g., Alpha Vantage, Yahoo Finance, or any chosen provider)
* **Authentication:** JWT-based authentication for secure user login
* **Hosting:** Deployed using cloud services like AWS, Firebase, or Heroku

**4. Features**

* **User Authentication:** Secure sign-up and login system using JWT authentication.
* **Real-time Stock Data:** Fetch and display live stock market prices.
* **Search Functionality:** Users can search for specific stocks by ticker symbols.
* **Stock Charts:** Interactive charts using libraries like Chart.js or D3.js.
* **Portfolio Management:** Users can add, remove, and track their stock holdings.
* **News Integration:** Fetch and display the latest stock market news.

**5. System Architecture**

* **Frontend:** Angular-based single-page application (SPA) fetching data through API calls.
* **Backend:** Node.js RESTful API handling authentication and stock data requests.
* **Database:** MongoDB storing user information, portfolio details, and stock preferences.
* **Third-party API:** Integrated to fetch live stock prices and historical data.

**6. Challenges Faced**

* Ensuring accurate real-time stock data retrieval.
* Handling API rate limits effectively.
* Managing state and responsiveness in the frontend application.
* Implementing a scalable authentication system.

**7. Future Enhancements**

* Implement AI-driven stock predictions.
* Add real-time notifications for significant market changes.
* Enhance UI/UX with advanced visualizations.
* Introduce social features like forums for stock discussions.
* Expand support for multiple stock exchanges globally.

**8. Conclusion** The Stock Market Tracker is a comprehensive web-based platform designed to assist users in monitoring stock market trends efficiently. With real-time data, portfolio management, and interactive charts, the project serves as a valuable tool for traders and investors. Future improvements will further enhance i