**Project Report: StonksHub - A Dynamic Stock Market Dashboard**

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**Project Title:** StonksHub - Dynamic Stock Market Dashboard

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**1.0 Executive Summary**

This report outlines the development and features of **StonksHub**, a dynamic, single-page web application designed to simulate a real-time stock market dashboard. The project's goal was to create a user-friendly interface for viewing, filtering, and analyzing mock stock market data. The application provides a seamless user experience by allowing users to switch between a market overview and a detailed stock view without page reloads.

The project successfully implements all core functionalities, including:

* A **real-time simulation** of stock price fluctuations.
* Advanced **filtering and searching** capabilities.
* A detailed view with **dynamic charts** and key financial metrics.
* A sleek, modern, and **responsive dark-mode interface**.

The application is built using **HTML**, **CSS**, and **JavaScript**, with **jQuery** for DOM manipulation and **Chart.js** for data visualization, all styled with the **Bootstrap** framework. The result is a robust and interactive prototype that effectively demonstrates modern front-end development techniques.

**2.0 Project Objectives**

The primary objectives for the StonksHub project were to:

* **Develop an Interactive Dashboard:** Create a single-page application that provides a comprehensive overview of the stock market.
* **Simulate Real-Time Data:** Mimic a live market environment by having stock prices update automatically at regular intervals.
* **Provide Powerful Filtering:** Allow users to easily search for specific stocks and filter the list by sector and market capitalization.
* **Offer In-Depth Analysis:** Create a detailed view for each stock, including a historical price chart, company profile, and key financial metrics.
* **Ensure Responsive Design:** Build a fully responsive interface that provides an optimal viewing experience on desktops, tablets, and mobile devices.

**3.0 Features Implemented**

StonksHub is equipped with a rich set of features that provide a comprehensive user experience.

**3.1 Real-Time Price Simulation**

To create a dynamic and engaging experience, the application simulates real-time market activity.

* **JavaScript setInterval:** A function runs every two seconds to update the price of each stock with a minor, randomized fluctuation.
* **Visual Indicators:** The user interface instantly reflects these changes. Prices are color-coded (**green** for an increase, **red** for a decrease) and display an arrow icon indicating the direction of the change, providing immediate visual feedback.

**3.2 Advanced Search and Filtering**

Users can efficiently navigate the market data using a multi-faceted filtering system.

* **Live Search:** A search bar allows users to filter stocks by company name or ticker symbol in real-time as they type.
* **Dropdown Filters:** Users can further refine the list by selecting a specific sector (e.g., "Technology", "Financial") or market capitalization size (e.g., "Large-Cap", "Mid-Cap"). The sector options are dynamically populated from the initial stock data.

**3.3 Two-View Layout (Master-Detail)**

The application utilizes a seamless two-view interface to present information without page reloads.

* **Market Overview:** The default view is a table listing all stocks that match the current filter criteria.
* **Detailed View:** Clicking on any stock in the table hides the overview and displays a detailed page for that specific stock. A "Back" button allows for easy navigation back to the main list.

**3.4 In-Depth Stock Detail Page**

The detail view provides a wealth of information for a selected stock.

* **Price History Chart:** A visually appealing line chart, powered by **Chart.js**, displays the stock's 30-day price history. The chart features a gradient fill for a modern aesthetic.
* **Company Profile & Metrics:** This section displays the company's bio and key financial metrics, such as Market Cap, P/E Ratio, and Dividend Yield, giving users a quick analytical snapshot.

**4.0 Technologies Used**

StonksHub leverages a combination of standard and powerful front-end technologies to achieve its functionality and design.

* **HTML5:** Forms the semantic structure of the application, including the layout for both the list and detail views.
* **CSS3:** Used for custom styling to create the dark-mode theme, implement price change color indicators, and refine the overall aesthetic beyond Bootstrap's defaults.
* **Bootstrap 5.3:** The core CSS framework used for creating the responsive grid layout, styling forms, tables, and other UI components.
* **JavaScript (ES6):** Powers all the client-side logic, including the real-time data simulation, filtering algorithms, and view switching.
* **jQuery 3.7.1:** Used to simplify DOM manipulation and event handling, such as capturing filter changes and clicks on stock rows.
* **Chart.js:** A powerful JavaScript library used to render the dynamic and responsive price history charts in the stock detail view.

**5.0 Conclusion and Future Recommendations**

StonksHub successfully meets all its project objectives, delivering a feature-rich, interactive, and visually polished stock market dashboard prototype. The application effectively demonstrates modern front-end development practices, creating a seamless and engaging user experience.

For future development, the following enhancements could be considered:

* **API Integration:** Replace the mock data with a connection to a real financial data API (e.g., Finnhub, Alpha Vantage) to provide live, accurate market information.
* **User Accounts & Watchlists:** Introduce user authentication to allow individuals to create and save personalized watchlists of their favorite stocks.
* **Advanced Charting:** Enhance the chart with features like different time-range selections (1D, 1W, 1M, 1Y), technical indicators (e.g., moving averages), and volume data.
* **Data Persistence:** Use localStorage to save the user's filter preferences and watchlist selections between sessions.

Screenshots:





