



COLLEGE CODE : 9111

COLLEGE NAME : SRM Madurai College For Engineering And Technology

DEPARTMENT: Computer Science And Engineering

STUDENT NM-ID : 1AB1AA81B6B40D9B5C94D469B460D04A
1FFEB20A6540161A1F54E258167D1978
877B09181AE2E069AFF4C36AF16D1C4D
FF192F92083F64EB3754B0596244F018

ROLL NO ; 911123104040
911123104016
911123104032
911123104004

DATE : 15/09/2025

Completed the project named as phase 1

TECHNOLOGY PROJECT NAME : REAL TIME STOCK TICKER

SUBMITTED BY:

Rajesh Kumar M	mobile no : 8524925826
Harish manikandan R	mobile no : 6369119261
Nyson DM	mobile no : 8682054707
Arul kumaran M	mobile no : 8428853991

Real-Time Stock Ticker - Detailed Project Document

1. Problem Statement

The global financial market operates in a highly dynamic environment where stock prices change within milliseconds. Retail investors, day traders, and institutional analysts depend on real-time data to make critical decisions. However, most existing stock market tracking tools either come with high subscription fees, lack customization for specific needs, or provide delayed data feeds that hinder rapid trading activities. Furthermore, students and educators often lack affordable platforms for stock market simulations and analysis. This project aims to address these gaps by providing a real-time stock ticker platform that is fast, reliable, affordable, and highly customizable. The solution will combine live updates, analytics, API integrations, and alert mechanisms to cater to diverse user groups across the financial ecosystem.

2. User Stakeholders

Stakeholder	Role/Need
Retail Investors	Individuals who want to monitor and track stock performance.
Day Traders	Professionals who require sub-second price updates .
Financial Analysts	Experts who need tools for technical and fundamental analysis.
Institutional Investors	Firms that integrate real-time stock data into their proprietary
Developers & Startups	Tech teams who build trading apps, dashboards, or financial
Educators & Students	Academic institutions and learners who use the platform to

3. User Stories

- As an **investor**, I want to customize my dashboard with favorite stocks so that I can track them at a glance.
- As a **trader**, I want real-time alerts on my mobile when a stock hits a price threshold so that I can execute trades instantly.
- As a **financial analyst**, I want to download historical stock performance reports in CSV/Excel so that I can run trend analysis.
- As a **developer**, I want REST APIs and WebSocket support so that I can integrate real-time data into my applications.
- As a **student**, I want a demo trading mode with simulated portfolios so that I can learn without financial risk.
- As an **institutional investor**, I want to ensure system scalability and low latency so that my large-volume trades are not delayed.

4. MVP Features

The Minimum Viable Product (MVP) will focus on delivering core features that address the immediate needs of users while ensuring scalability for future enhancements. Key MVP features include:

1. **Real-Time Price Updates:** Stock prices update within 1-2 seconds across the dashboard and APIs.
2. **Watchlist Management:** Users can create, edit, and delete custom stock watchlists.
3. **Price Alerts:** SMS, email, and push notifications triggered when stocks meet user-defined thresholds.
4. **Historical Data Visualization:** Line and candlestick charts covering multiple years.
5. **API Access:** REST API for historical and live data, WebSocket for streaming updates.
6. **Cross-Platform Dashboard:** Web and mobile-friendly interface optimized for responsiveness.
7. **Security & Authentication:** Secure login, API key-based authentication for developers.
8. **Basic Analytics:** Volume trends, moving averages, and simple portfolio gain/loss tracking.

5. Wireframes / API Endpoint List

Conceptual Wireframes:

- **Dashboard:** A main screen displaying watchlists, real-time stock data, and overall portfolio summary.
- **Stock Detail Page:** Includes price charts, historical performance, analyst ratings, and comparison with competitors.
- **Alerts & Notifications:** A screen to manage all alerts with filtering options by stock, percentage change, or market cap.
- **Settings & API Management:** User preferences, API key management, and integration settings.

API Endpoints (Draft List):

GET /api/v1/stocks/{symbol} → Retrieve real-time price and volume
GET /api/v1/stocks/{symbol}/history?range=1y → Historical performance data
POST /api/v1/watchlist → Add stock to a user's watchlist
GET /api/v1/watchlist → Retrieve user's watchlist
DELETE /api/v1/watchlist/{symbol} → Remove stock from watchlist
POST /api/v1/alerts → Create or update price alert
GET /api/v1/alerts → Retrieve all active alerts
WS /api/v1/stream → WebSocket connection for live stock updates

6. Acceptance Criteria

The success of the Real-Time Stock Ticker will be evaluated based on the following measurable acceptance criteria:

1. **Real-Time Accuracy:** Stock prices must update with a maximum latency of 2 seconds compared to official market data.
2. **Scalability:** The system must support at least 50,000 concurrent users without performance degradation.
3. **Watchlist Functionality:** Users must be able to add, edit, and delete stocks from watchlists seamlessly.
4. **Alert Responsiveness:** Price alerts must be delivered within 3 seconds of the trigger condition.
5. **Data Coverage:** Historical data must include at least 5 years of stock performance.
6. **API Throughput:** REST API should handle at least 1000 requests per minute per user.
7. **Cross-Device Accessibility:** The dashboard must work smoothly on desktops, tablets, and smartphones.
8. **Security:** User authentication must be secure with encryption, and unauthorized access to APIs must be prevented.
9. **Usability:** New users must be able to set up their watchlist and alerts within 5 minutes of registration.
10. **System Reliability:** The platform must maintain 99.9% uptime during trading hours.