News Sentiment Analysis Driven Portfolio

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Mini Project – First Review

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Introduction

- Financial markets are influenced by news and investor sentiment.
- Manual analysis of large-scale financial news is inefficient.
- NLP enables automated sentiment extraction from text.
- This project explores sentiment-based stock portfolio analysis.

Problem Statement

- Thousands of financial news articles are published daily.
- Investors struggle to process unstructured textual data.
- Traditional models ignore sentiment-driven market behavior.
- Need for an automated, sentiment-aware decision support system.

Objectives

Technical Objectives

- Collect financial news from online sources.
- Perform sentiment analysis using NLP (planned).
- Store and manage sentiment data.
- Present insights through a web interface.

Societal Objectives

- Reduce emotional bias in investment decisions.
- Improve financial awareness using technology.

Purpose and Need

- Assists students and beginner investors.
- Simplifies complex financial news into insights.
- Demonstrates practical NLP application.
- Acts as an educational decision-support tool.

Scope of the Project

- Web-based sentiment analysis system.
- News collection and sentiment classification.
- Portfolio insight generation (planned).
- Scalable for future enhancements.

Social Relevance

- Promotes responsible and informed investing.
- Enhances financial literacy.
- Encourages data-driven decision making.

UN Sustainable Development Goals

- SDG 8 – Decent Work and Economic Growth
- SDG 9 – Industry, Innovation and Infrastructure
- SDG 12 – Responsible Consumption and Production

Functional Requirements

- User authentication (Login implemented).
- Fetch financial news.
- Perform sentiment analysis (admin controlled).
- Store and retrieve sentiment data.
- Display results to users.

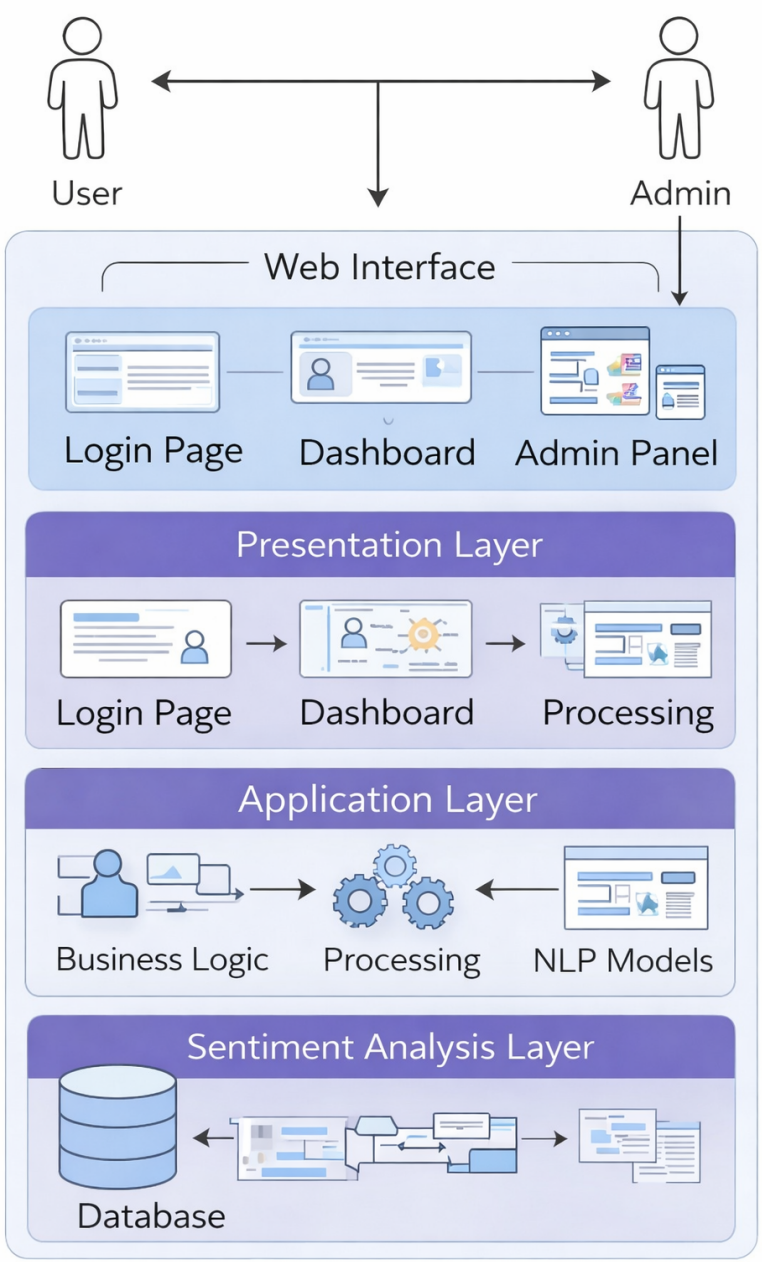
Non-Functional Requirements

- Usability and accessibility.
- Scalability for large datasets.
- Secure data handling.
- Maintainable system architecture.

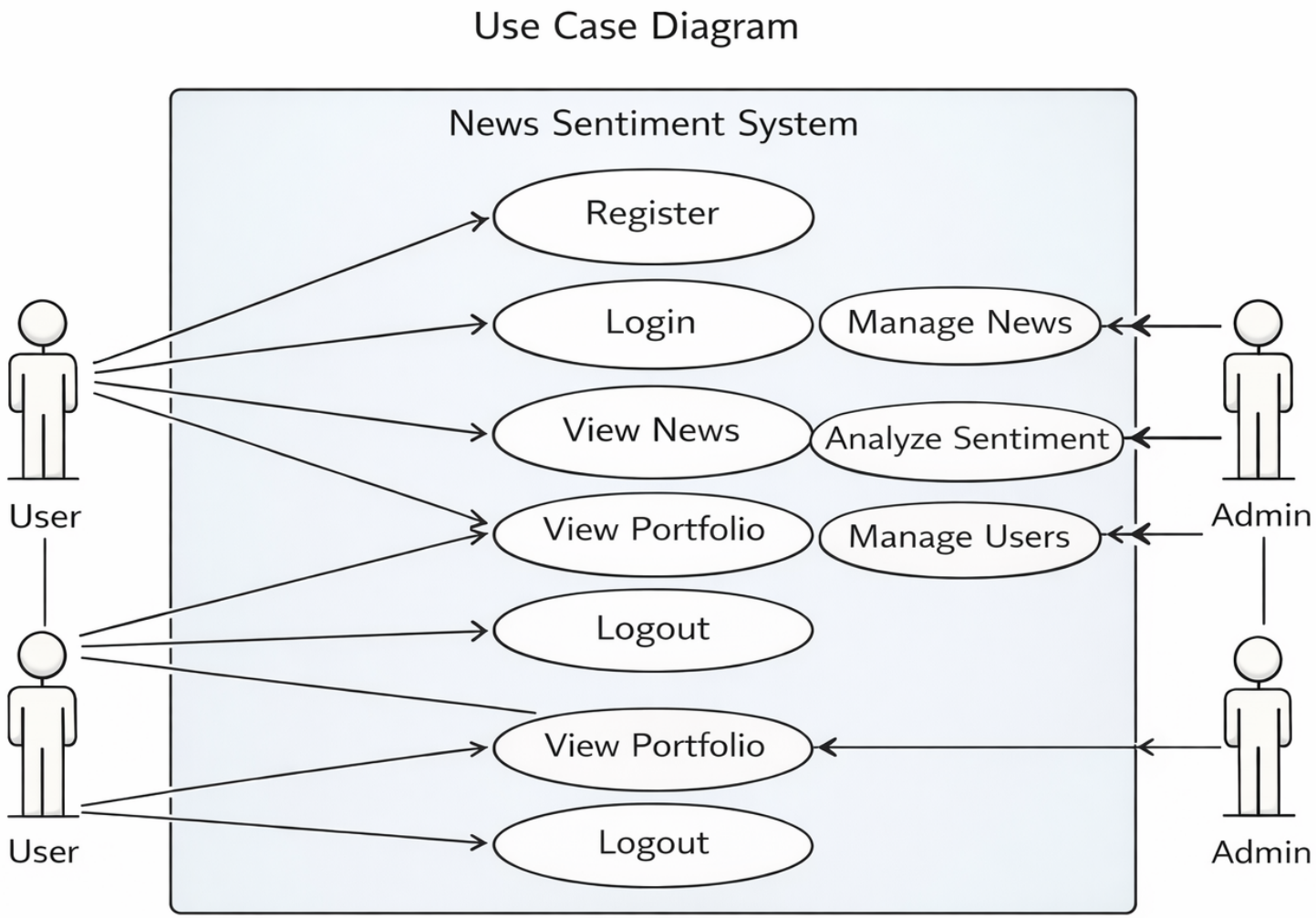
Technology Stack

- Frontend: HTML, CSS, JavaScript
- Backend: Node.js (planned)
- NLP: FinBERT (planned)
- Database: PostgreSQL (planned)
- APIs: NEWS API (planned)

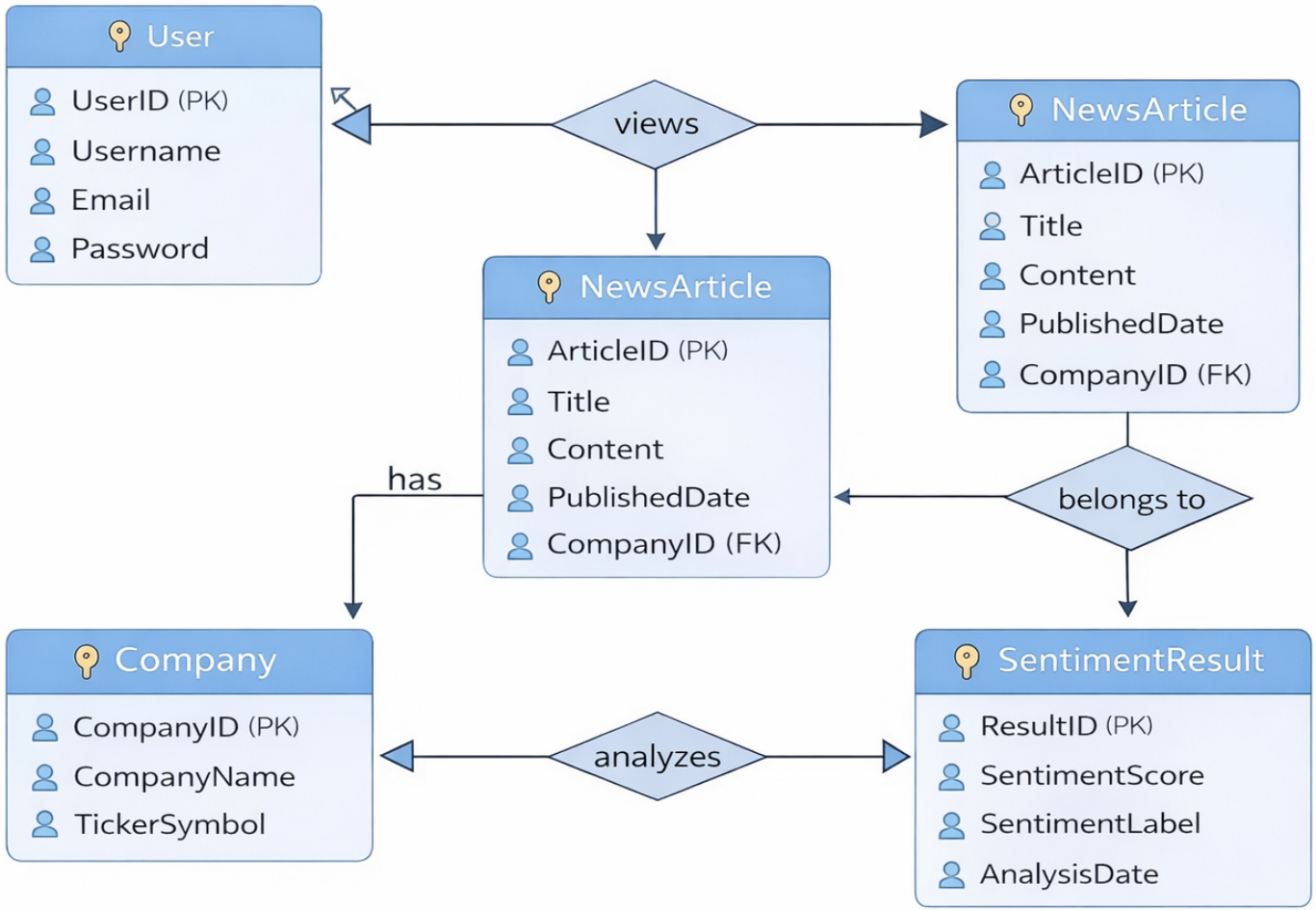
System Architecture



Use Case Diagram



E-R Diagram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UserID (PK)
Username
Email
Password
views
NewsArticle
ArticleID (PK)
Title
Content
PublishedDate
CompanyID (FK)
NewsArticle
ArticleID (PK)
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CompanyID (FK)
has
belongs to
Company
CompanyID (PK)
CompanyName
TickerSymbol
analyzes
SentimentResult
ResultID (PK)
SentimentScore
SentimentLabel
AnalysisDate

UI / Frontend Screens

- Login page implemented.
- Basic input validation completed.
- Dashboard and analytics pages planned.

Project Timeline

- Problem Definition & SRS: Dec 15 – Dec 25
- Architecture & Design: Dec 26 – Jan 15
- Frontend Development: Jan 16 – Feb 5
- Backend Integration: Feb 6 – Feb 25
- Testing & Improvements: Feb 26 – Mar 15

SDG Achievement Assessment

- Accuracy of sentiment classification (planned).
- Accessibility of financial insights.
- Improvement in financial awareness.

Conclusion

- Clear problem definition and system design completed.
- Login module successfully implemented.
- Core logic and NLP integration planned next.
- Project aligns with sustainable engineering goals.

Team Members

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Thank You