Group Number – 21

Group Members :-

Om Bhutkar - 202201040111

Vishal Kesharwani - 202201040121

Suraj Didwagh - 202201040126

Namita Dewang - 202201040151

Atharva Solanke - 202201040163

Nihar Bhatt - 202201040171

Project Title: Market Sentiment Analyzer from Twitter/News

Work Breakdown Structure (WBS)

---

1. Project Planning

- Define scope and objectives
- Choose process model (Iterative)
- Assign team roles

2. Frontend Development

- Design UI with HTML/CSS
- Integrate user inputs & filters
- Use Chart.js for visualizing sentiment and price trends

3. Backend Development

- Build APIs using Flask/FastAPI

- Connect to MongoDB
- Schedule data fetch tasks
- Integrate Twitter/News APIs

4. Sentiment Analysis

- Preprocess tweets/news data
- Integrate Twitter-specific RoBERTa model
- Classify text as positive, negative, or neutral
- Evaluate model performance

5. Price Data Integration

- Fetch asset prices via financial APIs
- Sync sentiment data with price data
- Overlay both on the dashboard

6. Testing

- Functional and integration testing
- Sentiment model accuracy checks
- Performance and load testing

7. Deployment

- Host backend and frontend (e.g., Heroku, Render)
- Connect and deploy MongoDB
- Ensure system uptime and performance

8. Documentation & Report

- Prepare final report and technical documentation
- Include COCOMO cost estimation
- Create hackathon presentation slides

COCOMO Cost Estimation Report

Scaled-Down MVP Plan for "Market Sentiment Analyzer" Hackathon Project

1. Project Overview

The original project scope has been reduced to fit the hackathon constraints of 2 days and 6 developers. The focus is now solely on Twitter sentiment analysis, using pre-trained models and a simple visualization dashboard.

The estimated project size for this MVP is approximately 1.0 KLOC (1000 lines of code), covering backend API, Twitter integration, sentiment analysis module integration, database, and a minimal frontend.

2. COCOMO Model Overview

The COCOMO (Constructive Cost Model) estimates software development effort based on code size (KLOC) and project mode. Here, we apply the Organic Mode model suited for small, familiar projects.

Formulas (Organic Mode):

- Effort (E) = 2.4 × (KLOC)^1.05

- Development Time (T) = 2.5 × (Effort)^0.38

- People Required (P) = Effort / Time

3. Cost Estimation Calculations

Using the estimated code size of 1.0 KLOC:

- Effort (E) = 2.4 × (1.0)^1.05 = 2.4 person-months

- Development Time (T) = 2.5 × (2.4)^0.38 ≈ 3.48 months

- People Required (P) = 2.4 / 3.48 ≈ 0.69 developers

4. Available Effort Based on Hackathon Constraints

Number of developers: 6

Time available: 2 days ≈ 0.067 months

Total available effort = 6 × 0.067 = 0.4 person-months

5. Effort Comparison

Metric	Value
Estimated Effort Required	2.4 person-months
Available Effort (6 devs × 2 days)	0.4 person-months
Effort Coverage	0.4 / 2.4 ≈ 17%

6. Financial Cost Estimation

Assuming an average monthly developer cost of ₹25,000:

- Total Cost for full MVP = 2.4 × ₹25,000 = ₹60,000
- Cost corresponding to available effort (2 days) = 0.4 × ₹25,000 = ₹10,000

7. Summary Table

Metric	Value
Estimated KLOC	1.0
Effort	2.4 person-months
Development Time	3.48 months
Recommended Developers	0.69
Available Effort	0.4 person-months
Cost Estimate (full)	₹60,000
Cost Estimate (2 days)	₹10,000

8. Conclusion

The scaled-down MVP reduces the effort from the original 9.02 to approximately 2.4 person-months. However, the available effort in the hackathon setup (0.4 person-months) covers only about 17% of the required work.

This indicates the team must maximize efficiency by using pre-built libraries, focusing only on essential features, and minimizing custom code to deliver a functional MVP within 2 days.