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Subject Code and Title: SEP401 (N06748) Software Engineering Principles
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Assessment 1, Part A: Software Project Proposal

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Project Details

1. Project Title

   ClinicTrendsAI: a predictive dashboard for customer satisfaction for local business

2. Problem Description

   Local businesses rely heavily on customer satisfaction for growth and retention. Despite collecting regular feedback through surveys, these insights are often underutilized or manually reviewed too late to prevent client churn or service dips.

   Specific mapped out issues:

   - No automated system exists to track client sentiment trends over time
   - Stores can't anticipate service breakdowns or drop in satisfaction until it's too late
   - Decision makers often lack data-driven tools to link the performance metrics with real-time feedback

   Sub-issues:

   - Difficulty recognizing recurring issues across multiple locations
   - Manual survey analysis leads to missed early warning signs
   - Inability to forecast future satisfaction metrics based on past performance

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3. Proposed Solution

Overview

ClinicTrendsAI is a lightweight analytics dashboard powered by real-world survey data from local businesses. It ingests historical NPS-style feedback and applies machine learning to predict customer satisfaction trends across clinics, helping managers make smarter, proactive decisions.

Key Features

- Upload csv files of survey data (supporting timestamps, rating, optional comments)
- Visualize trends in satisfaction over weeks, months, quarters
- Forecast future satisfaction using regression-based ML models
- Identify leading indicators of drop-offs (ex> clinic location, service type)
- Generate downloadable insights for stakeholder meetings

Business Value

ClinicTrendsAI empowers managers to act before client satisfaction declines, improving retention and service quality. It reduces reliance on gut feeling, introduces predictive decision-making and encourages a data-first culture across the business.

4. Project Plan

Software Process Model:

I chose Agile due to its flexibility and iterate structure, which suits evolving insights from user feedback and ML experimentation.

Timeline and Activities

Phase	**Weeks**	**Activities**
Requirements and Planning	1-3	Define key metrics, user stories, feature scope
Design and dataset setup	4-6	Prepare sample survey data, design UI wireframes, select ML model
Development	7-10	Build frontend dashboard, backend prediction engine and integrate the charts

Testing and Evaluating	11	Validate accuracy, test with sample data, refine UI
Presentation	12	Prepare summary, present insigh and demo tool

Justification

The agile approach allows continuous testing of ML model assumptions and UI design changes as new insights are discovered. Its sprint structure aligns with the Software Engineering Principles milestones and encourages fast and dynamic feedback.

5. References

- Stephens, R. (2015). *Beginning Software Engineering*. Wrox Press.
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- Cobb, C. G. (2015). *The Project Manager's Guide to Mastering Agile*. Wiley.
- Ahmad, M. O., Markkula, J., Oivo, M. (2013). *Factors affecting software maintainability from customer perspective*. Journal of Systems and Software.