



AI-Assisted Requirements Analysis – Experiment I

SE 305 - SE 321
Software Specification and Design
FALL 2025-2026

Version 1.0 - November 2025

Time: 60 Minutes

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1 EXPERIMENT OVERVIEW

This lab assignment experiment is designed to simulate the initial, critical phase of the software development lifecycle. You will **engage with a real-world client, record the interview, transcribe it, and then use the Gemini AI to perform an initial analysis**. Your role is not just to use the tool, but to guide it, verify its output, and produce a professional requirements document based on the interaction. Be sure that you are checking your work **iteratively**. This work will be submitted as part of your SE 305 - SE 321 lab assignment.

2 EXPERIMENT PHASES AND DELIVERABLES

2.1 Phase 1: Client Meeting and Data Collection

Objective: The objective of this phase is to identify a suitable client, gather preliminary contextual information, and conduct an initial meeting to elicit high-level requirements in an ethical and professional manner.

This foundational phase involves professional interaction and ethical data handling.

Steps:

- **Identify a Client:** Find a “client” for a potential software project. This could be a small business or a non-profit organization.
- **Pre-Meeting Preparation:** Investigate the client’s business domain. Prepare a meeting agenda and a list of open-ended questions to guide the conversation (e.g., “What problem are you trying to solve?”, “Who are the users?”, “How would you define success for this project?”).
- **Obtain Consent:** At the beginning of the meeting, you **must** obtain explicit permission to record the audio. Explain that the recording will be used solely for educational and project purposes.

- **Conduct the Meeting:** Facilitate the discussion, focusing on understanding the client's goals, pain points, and vision (**Preferably face-to-face for the first meeting**).

Deliverables for Phase 1:

- **Meeting Agenda:** The document prepared before the meeting.
- **Proof of Consent**
- **Audio Recording:** The raw audio file of the meeting (*SectionNo_GroupNo_ClientMeeting_Raw.mp3*).

2.2 Phase 2: Transcription

Objective: The objective of this phase is to convert the raw audio recording into a complete and accurate transcript that serves as the primary input for requirements analysis.

Raw audio is converted into a structured text format for analysis.

Steps:

- **Transcribe the Audio:** Use an automated transcription service (e.g. Gemini) or manually transcribe the entire meeting.
- **Review and Correct:** Listen to the audio while reading the transcript. Correct any errors in the text, paying close attention to technical terms, names, and key phrases. Accuracy is crucial for the next phase.

Deliverable for Phase 2:

- **Final Transcript:** A clean, accurate text document of the entire conversation (**Appendix A**)
(e.g., *SectionNo_GroupNo_StudentNo_ClientMeeting_Transcript.docx* or *.txt*).

2.3 Phase 3: AI-Powered Requirements Analysis

Objective: The objective of this phase is to leverage AI tool to generate a preliminary list of functional and non-functional requirements, and then refine this list into a validated set through critical review.

This is the core analytical step where you leverage Gemini.

Steps:

- **Prepare the Prompt:** Provide the full, corrected transcript to Gemini. You will need to craft a clear and specific instruction, known as a prompt.
Useful resources on prompt writing:
 - YouTube: Introduction to Prompt Engineering
 - YouTube: Advanced Prompting Techniques
- **Evaluate the Output:** Critically review the requirements list generated by Gemini. Does it accurately reflect the conversation? Did it miss anything important? Did it misinterpret any statements? Your expertise is required to validate and refine the AI's output.
- **Add Scripts:** Ask Gemini which parts of the speech are included to gather this requirement. Do it for every gathered requirement and specify the exact sentences that appears in the audio.

Deliverables for Phase 3:

- **AI Interaction Log:** A document containing the exact prompt you used and the raw, unedited response from AI tool (**Appendix B**).
- **Finalized Requirements List:** A refined document, edited by you, that represents the final, verified list of functional and non-functional requirements.

3 ASSIGNMENT REPORT STRUCTURE

You will compile all your work into a single, professional report. This document constitutes your **lab assignment submission** for SE 305 - SE 321. The report should follow this structure:

1. **Introduction** (10 / 100 points)
 - Purpose and scope of the project
 - Brief description of the client and their problem
2. **Methodology** (30 / 100 points)
 - **Data Collection:** Describe the client meeting process.
 - **Transcription:** Mention the tool/method used for transcription.
 - **Requirements Analysis:** Explain how Gemini was used, including the prompt engineering process and the methodology for validating the AI's output.
3. **Analysis and Findings** (30 / 100 points)
 - **3.1 Functional Requirements:** Present the final, curated list of functional requirements.
 - **3.2 Non-Functional Requirements:** Present the final list of non-functional requirements (e.g., performance, security, usability).
4. **Discussion and Conclusion** (30 / 100 points)
 - **Evaluation of AI Tool:** Discuss the advantages (e.g., speed, structured output) and limitations/challenges (e.g., potential for misinterpretation, the need for human oversight) of using an AI for requirements analysis.
 - **Differences:** You submitted requirements file for your project. List the differences between your requirements and these requirements. Which ones are better?
5. **Appendices** (*Without proper appendices, your work will not be considered complete, and grading will be based on this.*)
 - **Appendix A:** Full Meeting Transcript
 - **Appendix B:** AI Interaction Log (Prompt and Raw Output)

IMPORTANT NOTE

IMPORTANT! While the client interview will be conducted collaboratively as a group, the subsequent phases of this experiment, including transcription, requirements analysis and report preparation, must be completed **individually**. Each student is responsible for producing and submitting their own work.