Project Proposal[1] **:** *Intelligent Chatbot for Software Project Knowledge Management*

Background / Problem Description

Mr. Lei Sing Hong, founder of a local startup that provides software maintenance services, has identified a critical challenge in his growing team. With multiple ongoing software projects and a new programmer struggling to quickly understand the complexities of these applications, Mr. Lei aims to improve team productivity and onboarding efficiency. The proposed solution is an intelligent chatbot capable of reading, understanding, and responding to inquiries about software documentation, project progress, client information, and more. This will provide an efficient way for employees to access contextual knowledge quickly, thereby reducing the time spent on searching for information and increasing productivity.

Scope

The main objective of this project is to design and develop an intelligent chatbot that helps Mr. Lei's team manage project information more efficiently. The chatbot will be able to understand and respond to queries regarding various software projects, providing updates on project status, retrieving client details, and allowing users to access and search relevant documentation.

The chatbot will have several specific capabilities:

- It will be integrated with the company's project management system to allow real-time tracking of project status.
- It will use natural language processing (NLP) to understand and respond to user queries related to project documentation.
- The chatbot will enable users to easily retrieve client information, project timelines, and generate automated reports.
- The system will also allow team members to track project progress and update statuses based on current developments.

[1] This document is by no means a "full project proposal". It has been simplified and customized for the purposes of SWE30010 teaching. The full project proposal includes many other sections which have not been discussed during the first few weeks of SWE30010 teaching.

Stakeholders

Based on the background, the stakeholders that are involved in this project are the founder of the company, junior and senior programmers, project managers, and the company's clients. First and foremost, the founder of the company seeks to enhance productivity and improve onboarding efficiency for his company's staff by introducing an intelligent chatbot.

Secondly, junior programmers will benefit from the chatbot as its ability to deliver the project context in short period as well as lessen the onboarding's burden and other task. In addition to that, the senior programmers can use the chatbot to access project updates, details and so forth which enables them to keep track of the project's development.

Moreover, project managers can use the chatbot to maintain the project timeliness and delivery as well as can acquire a report of the project.

Although clients are indirectly involved, they may experience faster response times and improved service quality due to the chatbot's positive effect on the team's productivity and communication efficiency.

Deliverables and schedule

By the time we need to meet our client and present the final progress, the team will provide a draft of certain part for our software project such as the authentication to access specific documents. There will also be user manual provided and some tutorials for the staffs to refer to help them to understand the purpose of each feature. This project will need be done in the end of the semester which is in week 12.

1. Intelligent Chatbot Software

- Fully functional chatbot capable of reading, interpreting and responding to queries related to project documentation, progress and clients.
- A user-friendly interface for user to easily use it.

2. User Documentation

- A comprehensive user manual detailing how to interact with the Intelligent Chatbot, covering its functionalities, query handling and troubleshooting.
- FAQs section which can enhance user experience and improve user experience.

3. Training Program

- Provide a training session for employees who use the chatbot to familiarize themselves with chatbot features including hands-on sessions or workshops,

4. Repository of Project Information

- The website portal with access to the most recent data of the client project which includes resources, updates and documentation.

- Improving search functionality to speed up obtaining data and navigation.

Initial Release Schedule

No.	Item	Dependencies	Business Value (1 least – 10 most)	Release Schedule (Sprint #1 | 2 | 3 | …)
1	Set up chatbot framework (create basic structure)	None	10	Sprint #1
2	The staffs can understand the documents easier since the chatbot will explain it in simpler form.	None	9	Sprint #1
3	Each user from different departments/group projects are given specific authentication to access their project.	1	9	Sprint #1
4	Staffs can retrieve back the archive chats for future reference.	1	6	Sprint #1
5	The admin and project manager can manage the project status (Project progress tracking, generate reports).	None	7	Sprint #2
6	The boss can access all type of information within seconds such as client's contracts, technical specifications, meeting notes, etc.	4	4	Sprint #2
7	The staff can use the chatbot to identify any errors such as bug tracking, code structure and algorithm.	4	7	Sprint #2
8	Users are capable to personalize the settings such as the preferred	None	2	Sprint #3

	language.			
9	Integrate natural language project (NLP) tools for analysing project documentation	None	6	Sprint #3
10	Technical Query Support – Chatbot be able to answer all technical questions (programmers)	None	8	Sprint #3

Comments:

Lorenzo Anak Martin – I agreed on backlog item 3 and 4 to be in sprint 1# and sprint #2 respectively. First and foremost, for item 3, retrieving archive chats for future references is valuable for staff. This is entirely because it can affect most of the project's decision making, and communication. By allowing team members to use archived chats for references, it can help the team members to not missed out any crucial information that affect the project. Thus, I agree this feature to be in sprint #1. Secondly for project status I would agree it would be in sprint #2. This is highly because generating project's reports and status heavily dependent on collecting and gathering project data. Without the existing project, any data or information wouldn't exist in the first place. Reports and status updates require a foundation of ongoing tasks, milestones, and progress tracking, which takes time to accumulate. Therefore, this feature is believed to be in Sprint #2.

Derrick Lu Qing Lee - I agree that the feature allowing staff to retrieve archived chats for future reference should be included in Sprint 1. This functionality is essential from the start as it enables team members to revisit previous conversations, ensuring important information is not missed and enhancing collaboration. Since it is a core feature, implementing it early will improve the overall effectiveness of the chatbot. Additionally, the feature allowing the admin and project manager to manage project status and generate reports should be placed in Sprint 2. Although it provides significant business value, the technical complexity of integrating project progress tracking and report generation with the project management system may require a more stable framework. Thus, it is better suited for development once the foundational chatbot functions are established.

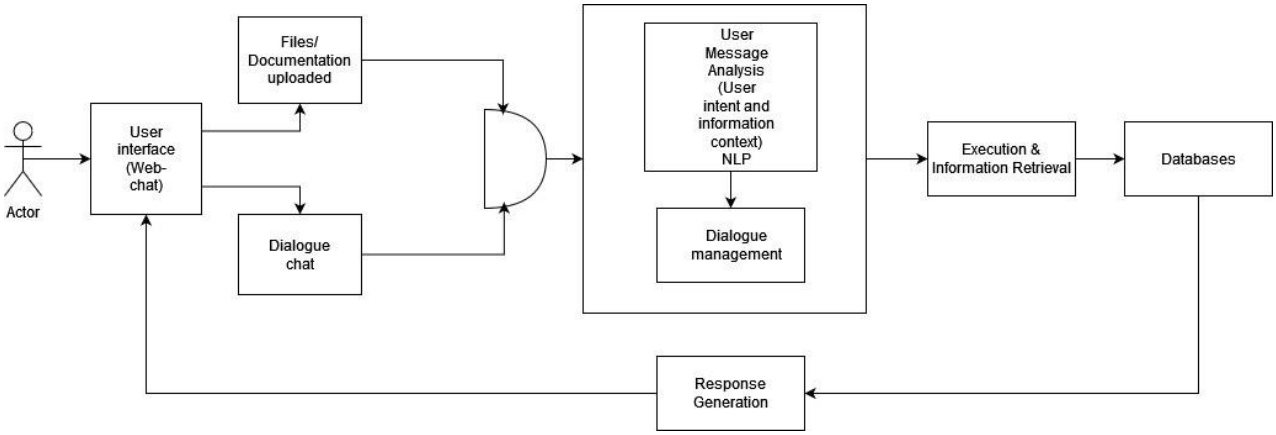
Bazilah Mardhiah Binti Azman - Overall, I agree with the proposed changes to the project background, which now includes more detailed explanations. We have also updated the scope,

deliverables, and schedule accordingly. For the product backlog items, we have agreed to add more items and adjust the sprint allocations for items 4 and 5. I believe it will require more time for the admin to assign specific authentication to each user, particularly since different group projects will require unique access permissions. As for the item 5, I agree with Derrick point regarding placing the project status management and report generation features in Sprint 2. It makes sense to prioritize the foundational chatbot functionalities first, as they create the necessary structure for a more complex system. The integration of project tracking and reporting will be more effective once the core framework is stable. This approach not only minimizes potential risks but also ensures smoother implementation of the more technically demanding features.

Nur Nazurah Binti Abdul Rased – For this task, we had all decided and agreed with all the changes and updates from the background until the backlog. We compared all our pass task 1 and come up with this new updated project proposal. I agree with everything especially the backlog parts. I believe it's better to put item 4 in Sprint #1 and item 5 in Sprint #2. Logically, I would understand why they could be put in the first sprint which is Sprint #1 as both items has a high business value but, in my opinion, it would be too heavy for our team to make it happen as both of it hold an important part for this project. Furthermore, we have a limited time for each sprint, and to make it all done with their respective time, I believe it's better to balance the tasks out instead of pushing all the heavy and important tasks into one sprint. Since items 2 until 4 have the same dependencies which is on item 1 and items 6 and 7 have dependencies on item 5, it will be much easier to separate them into two different parts or sprint for a better management.

Solution Direction

This solution focuses on developing an AI-powered chatbot to help employees access project information quickly and efficiently. The chatbot will act as a virtual assistant, providing easy access to tasks, deadlines, updates, and documents, which reduces onboarding time and improves productivity. It will use Azure SQL for secure and scalable data storage, ensuring project information is organized and easy to retrieve. Employees can interact with the chatbot using natural language, and it will integrate with existing tools to provide real-time updates. With role-based access controls via Azure Active Directory, the chatbot ensures data security. Over time, it will learn from interactions, improve the responses and make project management more seamless for the entire team.



Based on the diagram above shows the architecture diagram of the chatbot. The diagrams show how the interaction between the user and the chatbot should behave. In the diagram, the user can interact with the chatbot via the chat that's been provided. Any information that the user key-in will then have to go through the user-message analysis process which includes any files uploaded for the chatbot to identify the user's intent and the context of the information based on the user's queries after then it will go through dialogue management. The user can't just uploaded its file without stating its purpose nor reason otherwise the chatbot wouldn't understand what the user wants. After that, it goes through the execution and information retrieval which there the chatbot will check if there is any information that can fulfil the user's queries from the databases. From there, the information retrieved will be sent to the response generation which then will be sent and displayed on the chat for the user to review

Definition of Done

Quality Management

Quality Management	Definition of Done
Appropriateness Recognizability	The basic structure or UI for user is completely done based on the planned structure.

Time Behaviour	Responding time for the user interactions should be less than 3 seconds for most of the features.
Functional Correctness	All the functions are tested and passed the expected outcome. The chatbot can correctly answer at least 95% of project-related queries with accurate and up to date information. It supports search and retrieval of project documents and status updates efficiently.
Functional Appropriateness	The ability of the AI to learn about all the updated files and manage to interact with the users correctly 90% of the time.
Capacity	Manage to handle more than 15 users at once and still manage to run the functions without time lagging. Size of file need to be upload from users 50 MB – 150 MB.
Security	System achieves **99% uptime** during testing. **All security vulnerabilities** found in testing are resolved within 7 days. Authentication system ensures proper access control for department-specific resources.
Maintainability	All bugs identified during testing have an **MTTR of ≤ 2 business days**. Documentation is complete and handed off to the admin team.

Group 1

Student ID	Name
104386380	*Bazilah Mardhiah Binti Azman*
101226470	*Lorenzo Anak Martin*
101215931	*Derrick Lu Qing Lee*
102781080	*Nur Nazurah Binti Abdul Rased*

Comments:

Lorenzo Anak Martin:

When we discussed the Definition of Done, everyone agreed that these components should be integrated into the project. This teamwork ensures we stay aligned with the project's goals and maintain clear expectations throughout. The plan is practical, and with everyone on the same page, I believe we can meet these objectives smoothly.

Derrick Lu Qing Lee:

I'm on board with the group's final decision because it strikes the right balance between usability, reliability, and maintainability. By focusing on these areas, we're setting the foundation for a chatbot that not only works efficiently but also meets user needs effectively. The emphasis on maintaining 99% uptime and achieving fast response times feels achievable and will help us deliver real value.

Bazilah Mardhiah Binti Azman:

In our discussions, we made sure to include all the important aspects of quality management in the project. However, I feel that a few sections could benefit from more refinement to ensure they're practical and clear. This way, we won't just meet the standards but also keep things realistic and feasible as we move forward.

Nur Nazurah Binti Abdul Rased:

Through our conversations, we reached an agreement that the listed quality management requirements are appropriate for tracking progress in Sprint 1. With the Definition of Done in place, we have a solid objective to aim for, which will help us stay focused on achieving the key targets in the next phase.

Resources

The following are the team members and their respective roles in the Intelligent Chatbot project:

1. **Derrick Lu Qing Lee (Team Leader / Software Developer)**

a. Derrick is responsible for overseeing the entire project, ensuring that all tasks are completed on time, and managing the team. He will also be involved in setting up the chatbot framework, integrating Natural Language Processing (NLP) tools, and ensuring the chatbot's functionality.

2. **Bazilah Mardhiah Binti Azman (Backend Developer / Security Specialist)**

a. Bazilah will focus on developing the backend infrastructure of the chatbot, including the integration with the project management system and implementing authentication protocols. She is also responsible for ensuring that the system is secure, and that sensitive project data is protected.

3. **Nur Nazurah Binti Abdul Rased (UI/UX Designer / Documentation Lead)**

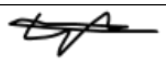
a. Nur Nazurah is responsible for designing a user-friendly interface that is intuitive and easy to navigate. Additionally, she will lead the development of user documentation, FAQs, and the training program to ensure that employees can use the chatbot effectively.

4. **Lorenzo Anak Martin (Quality Assurance / Project Manager Assistant)**

a. Lorenzo will be responsible for testing the chatbot to ensure that it meets the required quality standards. He will conduct usability tests, performance evaluations, and security checks. Lorenzo will also assist the project manager in tracking progress and ensuring that deliverables meet deadlines.

Approval Signatures:

Project Team

	Name of student	Student Id	Signature
1	Derrick Lu Qing Lee	101215931	
2	Bazilah Mardhiah Binti Azman	104386380	
3	Nur Nazurah Binti Abdul Rased	102781080	
4	Lorenzo Anak Martin	101226470	

Project Sponsor [Your Tutor]

Tutor's name (on behalf of the client)	Signature:
Sim Kwan Hua	