COSC310 Software Engineering – Assignment 2

AUTOMATED HOTEL RESERVATION AGENT

Team 18 - Ryan Lu Soon Han

Project repository: Team 18 Project Repository

PROJECT DESCRIPTION

The objective of this project was to practice project management skills and familiarize the software development process by creating an interactive conversation agent. The project I have chosen involves the chatbot taking on the role of a hotel reservation receptionist. The agent will lead the client to a successful reservation through a series of inquiries regarding room choice. The project will be broken down into 6 phases and will be proactively managed using project management tools such as JIRA.

SDLC SELECTION

The Waterfall Methodology

The Waterfall technique is a sequential strategy with specific objectives for each development phase. Despite being aware of the limitations of The Waterfall Model such as having to finish the previous step before moving to the next phase, I found it the best option due to the following reasons:

1. Since there is a lack of communication among team members within my group, I found it more efficient by following the Waterfall approach because it strives to create detailed documentation before any of the subsequent stages begin.
2. This model is simple and easy to understand and use. Because of the model's rigidity, it is simple to manage — each step has clear deliverables and a review mechanism.

SDLC PHASES

Requirement Analysis

> Perform research on the responsibilities of a front desk receptionist (specifically, duties related to making reservations)

> Study the systematic dialogues of a hotel receptionist (sentences generated from the chatbot must appear respectful and professional)

> Identify the potential guest requests and produce the corresponding response.

Planning

> Evaluate the terms of the assignment

> Define the scope and purpose of the program

> Create a Work Breakdown Structure (WBS)

> Draw up a Gantt chart to show the timeline and the dependencies of each task

Architectual Design

> Select a software development methodology

> Specify programming language and overall design

> Identify the methods(functions) used to develop the program

Implementation

> Code development (Build the program according to the design documents and outlined specifications)

> Write documentation for the project

Testing

> Ensure the program can run successfully in the console

> Carry out a complete dialogue of 30 turns between the bot and the guest.

> Identify the limitations of the program, through simulating at least 2 scenarios where the bot is incapable of handling the guest's request.

Project Presentation

> Display a live demonstration of the program and highlight any key features, or any known limitations.

> Provide a brief overview of each teammate's task assignments

> Present the project management graph on GitHub

> Highlight the use of project management tools

WORK BREAKDOWN STRUCTURE (WBS)

The WBS chart below decomposes phases need to be done to accomplish the project. Aside from phases, there is also detailed information demonstrating which task is assigned to whom and an estimated time of the duration of each task should be taken. This WBS is divided into six phases, including: Requirement Analysis, Planning, Architectual Design, Code Development, Testing and Presentation. Each phase has its own corresponding deliverables that are to be completed.
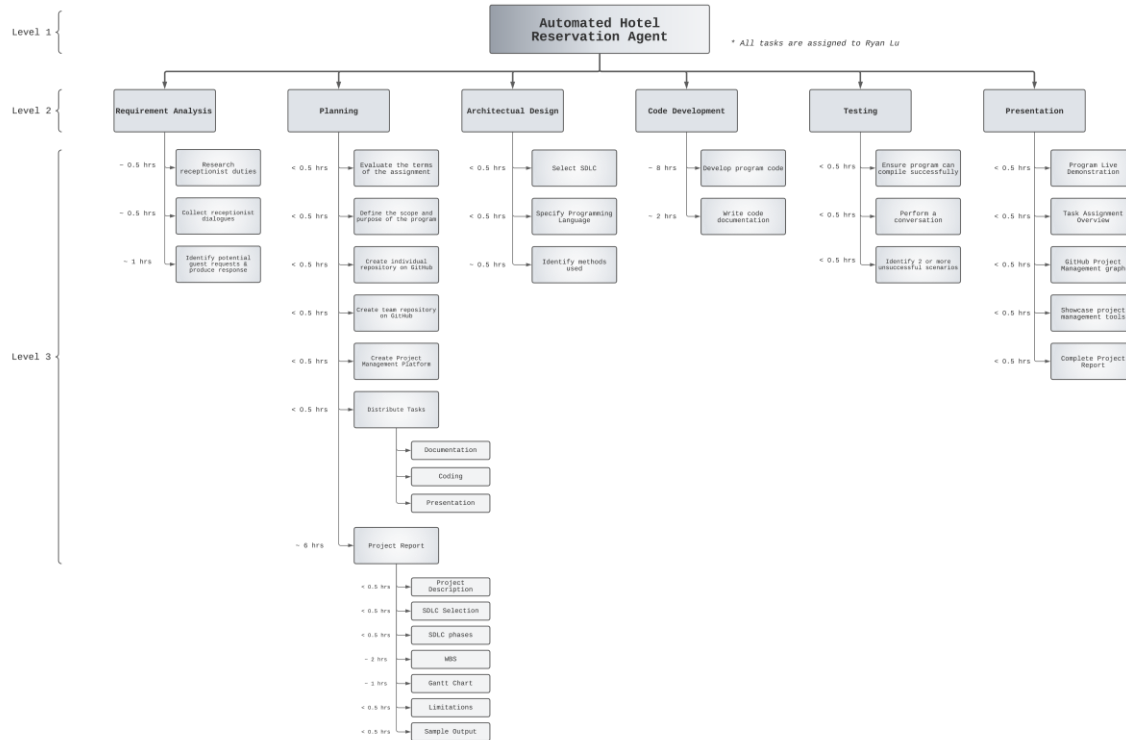
WBS access link: LucidChart WBS diagram (Click to view enlarged diagram in LucidChart)

Level	WBS Code	Task Name	Assigned to	Estimated Duration	Actual Duration	Start Date	End Date
1	1	**Automated Hotel Reservation Agent**	Ryan Lu	**~ 23 hrs**	**~ 33 hrs**	Feb 10, 5:00 pm	Feb 28, 4:00 pm
2	1.1	**Requirement Analysis**	Ryan Lu	**~ 2 hrs**	**~ 2 hrs**	Feb 10, 5:00 pm	Feb 10, 7:00 pm
3	1.1.1	Research receptionist duties	Ryan Lu	~ 0.5 hrs	~ 0.5 hrs		
3	1.1.2	Collect receptionist dialogues	Ryan Lu	~ 0.5 hrs	~ 0.5 hrs		
3	1.1.3	Identify potential guest requests & produce response	Ryan Lu	~ 1 hrs	~ 1 hrs		
2	1.2	**Planning**	Ryan Lu	**~ 8 hrs**	**~ 12 hrs**	Feb 12, 8:00 am	Feb 14, 5:00 pm
3	1.2.1	Evaluate the terms of the assignment	Ryan Lu	< 0.5 hrs	< 0.5 hrs		
3	1.2.2	Define the scope and purpose of the program	Ryan Lu	< 0.5 hrs	< 0.5 hrs		
3	1.2.3	Create individual repository on GitHub	Ryan Lu	< 0.5 hrs	< 0.5 hrs		
3	1.2.4	Create team repository on GitHub	Ryan Lu	< 0.5 hrs	< 0.5 hrs		
3	1.2.5	Create Project Management Platform (JIRA)	Ryan Lu	< 0.5 hrs	< 0.5 hrs		
3	1.2.6	**Distribute Tasks**	Ryan Lu	< 0.5 hrs	< 0.5 hrs		
4	1.2.6.1	Documentation	Ryan Lu	< 0.5 hrs	< 0.5 hrs		
4	1.2.6.2	Coding	Ryan Lu	< 0.5 hrs	< 0.5 hrs		
4	1.2.6.3	Presentation	Ryan Lu	< 0.5 hrs	< 0.5 hrs		
3	1.2.7	**Project Report**	Ryan Lu	~ 6 hrs	~ 8 hrs		
4	1.2.7.1	Write Project Description	Ryan Lu	< 0.5 hrs	< 0.5 hrs		
4	1.2.7.2	Agree upon a SDLC Selection	Ryan Lu	< 0.5 hrs	< 0.5 hrs		
4	1.2.7.3	List out all SDLC Phases	Ryan Lu	< 0.5 hrs	< 0.5 hrs		
4	1.2.7.4	Design a WBS	Ryan Lu	~ 2 hrs	~ 3 hrs		
4	1.2.7.5	Come up with a Gantt Chart	Ryan Lu	~ 1 hr	~ 2 hrs		
4	1.2.7.6	Identify program limitations	Ryan Lu	< 0.5 hrs	< 0.5 hrs		
4	1.2.7.7	Showcase sample output	Ryan Lu	< 0.5 hrs	< 0.5 hrs		
2	1.3	**Architectural Design**	Ryan Lu	**~ 0.5 hrs**	**~ 1 hr**	Feb 14, 7:00 pm	Feb 14, 8:00 pm
3	1.3.1	Select SDLC	Ryan Lu	< 0.5 hrs	< 0.5 hrs		
3	1.3.2	Specify programming language	Ryan Lu	< 0.5 hrs	< 0.5 hrs		
3	1.3.3	Identify methods used in program	Ryan Lu	< 0.5 hrs	< 0.5 hrs		
2	1.4	**Code Development**	Ryan Lu	**~ 10 hrs**	**~ 16 hrs**	Feb 20, 10:00 am	Feb 21, 11:00 pm
3	1.4.1	Develop program code	Ryan Lu	~ 8 hrs	~ 12 hrs		
3	1.4.2	Write code documentation	Ryan Lu	~ 2 hrs	~ 4 hrs		
2	1.5	**Testing**	Ryan Lu	**~ 1 hr**	**~ 1 hr**	Feb 21, 11:00 pm	Feb 22, 00:00 am
3	1.5.1	Ensure program can compile successfully	Ryan Lu	< 0.5 hrs	< 0.5 hrs		
3	1.5.2	Perform a successful conversation	Ryan Lu	< 0.5 hrs	< 0.5 hrs		
3	1.5.3	Identify 2 or more unsuccessful scenarios	Ryan Lu	< 0.5 hrs	< 0.5 hrs		
2	1.6	**Presentation**	Ryan Lu	**~ 1 hr**	**~ 1 hr**	Feb 28, 3: 00 pm	Feb 28, 4:00 pm
3	1.6.1	Program Live Demonstration	Ryan Lu	< 0.5 hrs	< 0.5 hrs		
3	1.6.2	Task Assignment Overview	Ryan Lu	< 0.5 hrs	< 0.5 hrs		
3	1.6.3	GitHub Project Management graph	Ryan Lu	< 0.5 hrs	< 0.5 hrs		
3	1.6.4	Showcase project management tools	Ryan Lu	< 0.5 hrs	< 0.5 hrs		
3	1.6.5	Complete Project Report	Ryan Lu	< 0.5 hrs	< 0.5 hrs		

GANTT CHART
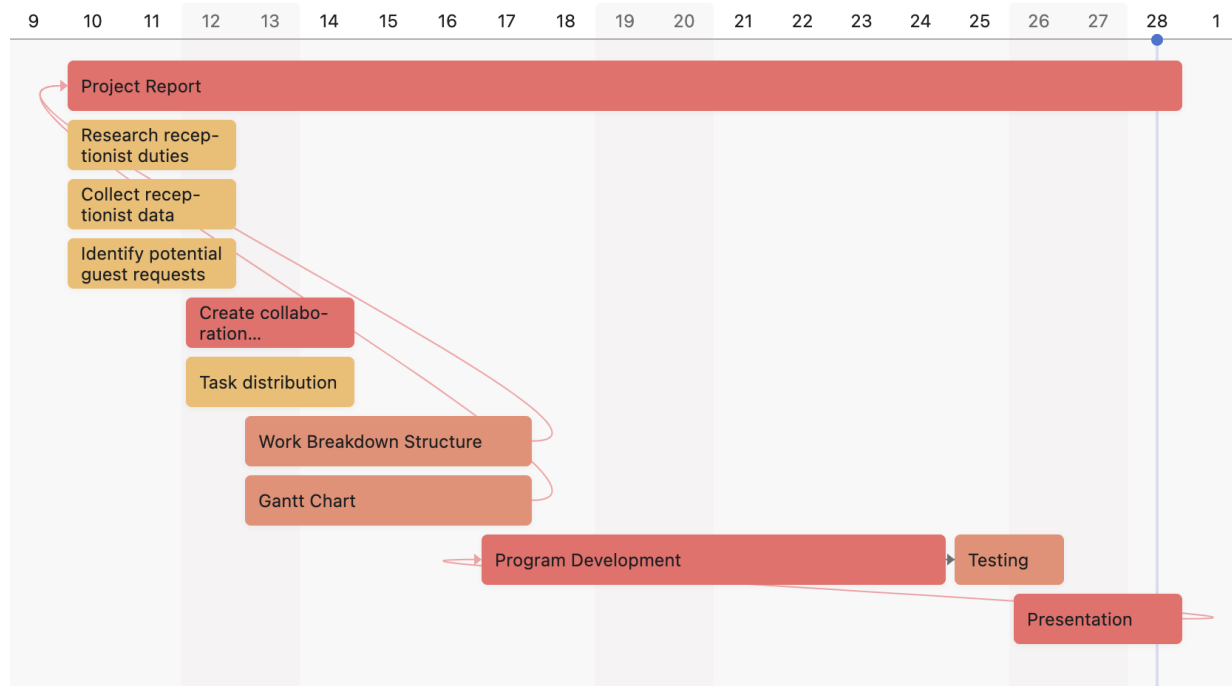
Gantt Chart access link: Asana Gantt Chart (Click to view enlarged chart in Asana)

The Gantt chart above shows all major tasks that need to be completed. Every assignment was evaluated in terms of urgency and was given appropriate timelines for completion. As shown on the chart, most tasks depend on the completion of tasks classified in the previous phase.

PROJECT MANAGEMENT

JIRA was used as my project management tool. The roadmap above shows a similar output to the Gantt chart, with the main difference being, the project management Gantt chart is divided into the six development phases. Each phase includes relevant sub-tasks that are marked as to-do (grey), in-progress (blue) and completed (green).

LIMITATIONS

There are several limitations in this version of the reservation agent. These limitations include:

- The program is unable to handle synonyms.
- The program cannot understand conversations if the user makes spelling mistakes in keywords.
- The program understands limited user inputs which makes dialogues inflexible and repetitive.
- The program does not have a GUI.
- The dialogue will only be finished if user input includes "thank you".

PROGRAM SAMPLE OUTPUT

Successful conversation

```
Ryan: Good morning. Welcome to Sunshine Hotel. This is Ryan speaking. How may I help you?
You: hi, i would like to make a reservation
Ryan: I am glad to offer help. What is your arriving date?
You: March 2nd
Ryan: We do have some vacancies around that date. How long will you be staying?
You: i will be staying for 4 nights
Ryan: How many people is the reservation for?
You: 2 adults
Ryan: Since you would like to make a reservation for 2 people, would you like 2 single beds or 1 double bed?
You: I would like a room with 1 double bed please
Ryan: Great! Would you like a smoking room?
You: no
Ryan: Perfect! Do you prefer a room where you can see the ocean view?
You: yes please
Ryan: Got that! Would you like the breakfast service?
You: yes
Ryan: Awesome! Do you have any pets with you?
You: no pets
Ryan: May I have your first name please?
You: Ryan
Ryan: Could you give me your last name?
You: Lu
Ryan: The rate of the room you reserved is $399. May I have your phone number please?
You: 123-456-7890
Ryan: Great. Now I'll need your credit card information to reserve the room for you. How would you like to pay? Visa or Mastercard
You: Visa
Ryan: Could you give me your card number please?
You: 4739375620284757
Ryan: And could you give me the name of teh cardholder please?
You: Ryan Lu
Ryan: Alright, Ms./Mr. Lu, your reservation has been made on March 2nd for a non-smoking and pet-infriendly room with 1 double bed and with ocean view and
with breakfast. Check-in is at 2 o'clock. If you have any other questions, please do not hesitate to call us.
You: thank you
Ryan: My pleasure. Ms./Mr. Lu. Have a nice day and I'm looking forward to seeing you soon.
```

Unsuccessful conversations

```
Ryan: Good morning. Welcome to Sunshine Hotel. This is Ryan speaking. How may I help you?
You: thank you
Ryan: My pleasure. Ms./Mr. . Have a nice day and I'm looking forward to seeing you soon.
```

Description: The dialogue will be ended immediately if the user input includes "thank you".

```
Ryan: Good morning. Welcome to Sunshine Hotel. This is Ryan speaking. How may I help you?
You: i would like to make a reservtion
Ryan:
You:
```

Description: The program cannot handle incorrect spelling keywords.