



Faculty of Computer Science and Information Technology

A FCSIT WHATSAPP CHATBOT

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A FCSIT WHATSAPP CHATBOT

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CHATBOT UNTUK FSKTM

TEO KUO HONG

Projek ini merupakan salah satu keperluan untuk
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TABLE OF CONTENTS

DECLARATION	i
ACKNOWLEDGEMENT	ii
LIST OF FIGURES	vi
LIST OF TABLES	ix
ABSTRACT	x
ABSTRAK	xi
CHAPTER 1: INTRODUCTION	1
1.1 Background.....	1
1.2 Problem Statement.....	2
1.3 Aims and Objectives.....	3
1.4 Scope.....	3
1.5 Methodology.....	4
1.6 Significance of Project.....	6
1.7 Project Schedule.....	7
1.8 Expected Outcome.....	8
1.9 Project Outline.....	9
1.9.1 Chapter 1: Introduction.....	9
1.9.2 Chapter 2: Literature Review.....	9
1.9.3 Chapter 3: Requirement Analysis and Design.....	9
1.9.4 Chapter 4: Implementation.....	9
1.9.5 Chapter 5: Testing.....	10
1.9.6 Chapter 6: Conclusion and Future Work.....	10
1.10 Summary.....	10
CHAPTER 2: LITERATURE REVIEW	11
2.1 Overview.....	11
2.2 Review on Existing System.....	11
2.2.1 Bottery.....	11
2.2.2 EduAssistant.....	17
2.2.3MOOCBuddy.....	21
2.3 Review on Research Article.....	23
2.3.1 Unleashing the Potential of Chatbots in Education: A State-Of-The-Art Analysis.....	24
2.3.2 Evaluating Natural Language Understanding Services for Conversational Question.....	26
2.4 Comparison between Existing Systems.....	27
2.5 Technologies and Tools Used in the Development of the Proposed System.....	28
2.5.1 DialogFlow (Framework for Developing Chatbot).....	28

2.5.2 Postman Application	30
2.5.3 WhatsApp API	31
2.5.4 Node.js.....	32
2.5.5 Google Firebase	32
2.6 Summary	33
CHAPTER 3: REQUIREMENT ANALYSIS AND SYSTEM DESIGN.....	34
3.1 Introduction.....	34
3.2 Requirements Analysis.....	35
3.2.1 Questionnaire	35
3.2.2 Functional Requirements	38
3.3 Design.....	39
3.3.1 Logical Design	39
3.3.2 Physical Design.....	95
3.4 Summary	110
CHAPTER 4: IMPLEMENTATION	111
4.1 Introduction.....	111
4.2 Environment Setup	111
4.3 User Interface Design.....	116
4.3.1 Common Pages Among Every Roles.....	116
4.3.2 Super Administrator	118
4.3.3 Lecturer	122
4.3.4 Faculty Administrator.....	128
4.3.5 Student	139
4.4 Summary	145
CHAPTER 5 TESTING.....	146
5.1 Introduction.....	146
5.2 Unit Testing	146
5.3 Functionality Testing.....	157
5.4 User Testing.....	170
5.4.1 Testing with Faculty’s Lecturer	170
5.4.2 Testing with Faculty’s Administrator	171
5.4.3 Testing with FCSIT Students.....	172
5.5 Summary	172
CHAPTER 6 CONCLUSION AND FUTURE WORK	173
6.1 Introduction.....	173
6.2 Project Achievement.....	173

6.3 Project Limitations	174
6.3.1 Queries in other languages than English	174
6.3.2 The chatbot does not accept audio messages, or file	174
6.3.3 The chat bot can only send text messages and files	174
6.4 Future Work	174
6.4.1 Accepts Other Languages Than English	174
6.4.2 Able to Interpret Audio and File Messages	175
6.4.3 Able to Utilize More Feature of WhatsApp Messenger	175
6.4.4 A Mobile App for The Web Template	175
6.4.5 Able to Utilize Official WhatsApp API	175
6.5 Conclusion	175
REFERENCES	176
APPENDIX	178
APPENDIX A: PROJECT GANTT CHART	178
APPENDIX B: QUESTIONNAIRE	179
APPENDIX C: USER TESTING FEEDBACK FORM (SUPER ADMINISTRATOR)	181
APPENDIX D: USER TESTING FEEDBACK FORM (LECTURER)	184
APPENDIX E: USER TESTING FEEDBACK FORM (FACULTY ADMINISTRATOR)	187
APPENDIX F: USER TESTING FEEDBAK FORM (STUDENTS)	191

LIST OF FIGURES

Figure 1.1 Project Schedule	7
Figure 2.1 Architecture of Bottery	12
Figure 2.2 Structure of a Simple Weather Forecast Chatbot	13
Figure 2.3 Bottery's State Graph	14
Figure 2.4 Example Conversation with Users	15
Figure 2.5 MOOCBuddy's Interaction with Users	22
Figure 2.6 General Architecture for Chatbots.....	26
Figure 2.7 DialogFlow's Interface.....	29
Figure 2.8 Postman Application's Interface	30
Figure 2.9 Basic Codes for Message Delivering.....	31
Figure 3.1 Question on The Most Popular Messaging Application	36
Figure 3.2 Question on How Often Important Messages Are Overlooked.....	36
Figure 3.3 Opinion on The Need of Chatbot	37
Figure 3.4 Preferred Medium for The Chatbot	38
Figure 3.5 System Architecture of the Proposed System	40
Figure 3.6 Use Case Diagram	41
Figure 3.7 Conversation Flow.....	63
Figure 3.8 Sequence Diagram of Carry Out Conversation	64
Figure 3.9 Sequence Diagram of Login	65
Figure 3.10 Sequence Diagram of Register New User	66
Figure 3.11 Sequence Diagram of Remove Existing User	67
Figure 3.12 Sequence Diagram of Change Password	67
Figure 3.13 Sequence Diagram of Add Class.....	68
Figure 3.14 Sequence Diagram of Make Class Announcement	69
Figure 3.15 Sequence Diagram of Manage Students' Queries About Class	70
Figure 3.16 Sequence Diagram of Delete Class.....	71
Figure 3.17 Sequence Diagram for Add Events.....	72
Figure 3.18 Sequence Diagram of Modify Existing Events.....	72
Figure 3.19 Sequence Diagram for Delete Events.....	73
Figure 3.20 Sequence Diagram for Add FAQ.....	73
Figure 3.21 Sequence Diagram of Modifying Existing FAQ.....	74
Figure 3.22 Sequence Diagram for Delete FAQ.....	75
Figure 3.23 Sequence Diagram of Make Faculty Announcement	76
Figure 3.24 Activity Diagram of Register New User by Super Administrator	78
Figure 3.25 Activity Diagram of Carry Out Conversation by Students	79
Figure 3.26 Activity Diagram for Login	80
Figure 3.27 Activity Diagram of Remove Existing User.....	81
Figure 3.28 Activity Diagram of Change Password.....	82
Figure 3.29 Activity Diagram of Add Class	83
Figure 3.30 Activity Diagram of Make Class Announcement.....	84
Figure 3.31 Activity Diagram of Manage Students' Queries About Class.....	85
Figure 3.32 Activity Diagram of Delete Class	86
Figure 3.33 Activity Diagram of Add New Events.....	87
Figure 3.34 Activity Diagram of Modifying Existing Events	88
Figure 3.35 Activity Diagram of Delete Existing Events	89
Figure 3.36 Activity Diagram of Add FAQ	90
Figure 3.37 Activity Diagram of Modifying Existing FAQ.....	91

Figure 3.38 Activity Diagram of Delete Existing FAQ.....	92
Figure 3.39 Activity Diagram of Make Faculty Announcement	93
Figure 3.40 Class Diagram.....	94
Figure 3.41 Wireframe for Login Page.....	95
Figure 3.42 Wireframe for Register New User.....	96
Figure 3.43 Wireframe for Remove Existing User	97
Figure 3.44 Wireframe for Change Password	98
Figure 3.45 Wireframe for Add Class.....	99
Figure 3.46 Wireframe for Make Announcement.....	100
Figure 3.47 Wireframe for Manage Students' Queries About Class	101
Figure 3.48 Wireframe for Delete Class.....	102
Figure 3.49 Wireframe for Add Event	103
Figure 3.50 Wireframe for Edit Events	104
Figure 3.51 Wireframe for Delete Event.....	105
Figure 3.52 Wireframe for Add FAQ.....	106
Figure 3.53 Wireframe for Edit Existing FAQ	107
Figure 3.54 Wireframe for Delete FAQ.....	108
Figure 3.55 Wireframe for Make Faculty Announcement.....	109
Figure 4.1: Visual Studio Code	111
Figure 4.2: AngularJS 9	112
Figure 4.3: NodeJS.....	112
Figure 4.4: Google Firebase	113
Figure 4.5: DialogFlow	114
Figure 4.6: Chat-API.....	115
Figure 4.7: Login Page.....	116
Figure 4.8: Forgot / Reset Password.....	116
Figure 4.9: Email for User to Reset Password	117
Figure 4.10: Reset Password Dialog After Clicking the Link.....	117
Figure 4.11: Change Password Page.....	118
Figure 4.12: Change Password Dialog	118
Figure 4.13: Super Administrator Home Page	119
Figure 4.14: Super Administrator View Users.....	120
Figure 4.15: Super Administrator Search Users	120
Figure 4.16: Super Administrator Add Users	121
Figure 4.17: Super Administrator Delete Users	121
Figure 4.18: User Receive Invitation from Super Administrator	122
Figure 4.19: Lecturer's Home Page	123
Figure 4.20: Lecturer View Classes Page.....	123
Figure 4.21: Lecturer Search Class Page	124
Figure 4.22: Lecturer Add Class Page	124
Figure 4.23: Lecturer View Class Page	125
Figure 4.24: Lecturer Answer Students' Queries	125
Figure 4.25: Students Receive Answer from Lecturer	126
Figure 4.26: Lecturer Make Announcement (Without File).....	126
Figure 4.27: Students Receive Announcement from Lecturer.....	127
Figure 4.28: Lecturer Make Announcement (With File).....	127
Figure 4.29: Students Receive Announcement from Lecturer.....	128
Figure 4.30: Faculty Administrator Home Page	128

Figure 4.31: Faculty Administrator View Events	129
Figure 4.32: Faculty Administrator Search Events	129
Figure 4.33: Faculty Administrator Add New Event	130
Figure 4.34: Faculty Administrator View A Particular Event.....	130
Figure 4.35: Faculty Administrator Modify A Particular Event	131
Figure 4.36: Faculty Administrator Delete Event	131
Figure 4.37: Faculty Administrator View FAQ.....	132
Figure 4.38: Faculty Administrator Search FAQ	133
Figure 4.39: Faculty Administrator Add New FAQ	133
Figure 4.40: Faculty Administrator View A Particular FAQ.....	134
Figure 4.41: Faculty Administrator Modify FAQ.....	135
Figure 4.42: Faculty Administrator Delete FAQ	135
Figure 4.43: Faculty Administrator Check Wrongly Answered Question	136
Figure 4.44: Check Unanswered Question by Selecting Range of Date	137
Figure 4.45: CSV File with Unanswered Question.....	137
Figure 4.46: Faculty Administrator Manage Announcement	138
Figure 4.47: Faculty Administrator Make Announcement (Customize)	138
Figure 4.48: Students Receive Announcement from Administrator	139
Figure 4.49: Student Chat “Hi”	139
Figure 4.50: Student Query for Class.....	140
Figure 4.51: Student Query for Events	140
Figure 4.52: Student Query for FAQ (Available FAQ)	141
Figure 4.53: Student Query for FAQ (Unavailable FAQ)	141
Figure 4.54: Student Enrol To A Class.....	142
Figure 4.55: Student Query Questions about Class.....	142
Figure 4.56: Student Unenroll From A Class	143
Figure 4.57: Student Subscribe To The Chat Bot.....	143
Figure 4.58: Student Update Personal Details	144
Figure 4.59: Student Unsubscribe From The Chat Bot	144

LIST OF TABLES

Table 2.1 Comparison between Existing Systems	27
Table 3.1 Phases and Activities in Agile Kanban Methodology.....	35
Table 3.2 Functional Requirements.....	38
Table 3.3 Breakdown of Use Case Diagram	41
Table 3.4 Use Case Description for Carry Out Conversation	42
Table 3.5 Use Case Description of Registering New User.....	43
Table 3.6 Use Case Description for Remove Existing User	45
Table 3.7 Use Case Description for Login	46
Table 3.8 Use Case Description for Change Password	47
Table 3.9 Use Case Description for Add Class.....	48
Table 3.10 Use Case Description for Make Class Announcement.....	49
Table 3.11 Use Case Description for Manage Students' Queries About Class.....	51
Table 3.12 Use Case Description for Delete Existing Class	52
Table 3.13 Use Case Description for Add New Events	53
Table 3.14 Use Case Description for Modifying Existing Events	55
Table 3.15 Use Case Description for Delete Existing Events.....	56
Table 3.16 Use Case Description for Add FAQ.....	57
Table 3.17 Use Case Description for Modifying Existing FAQ.....	58
Table 3.18 Use Case Description for Delete Existing FAQ	60
Table 3.19 Use Case Description for Make Faculty Announcement	61
Table 3.20 Difference Between Sequence Diagram and Activity Diagram.....	77
Table 5.1: Unit test for login page.....	146
Table 5.2: Unit test for features that can be accessed by Super Administrator	147
Table 5.3: Unit test for features that can be accessed by Faculty Administrator	149
Table 5.4: Unit test for features that can be accessed by Lecturer	152
Table 5.5: Unit test for features that can be accessed by Student	155
Table 5.6: Functionality Testing on Login	157
Table 5.7: Functionality Testing on Manage Users	158
Table 5.8: Functionality Testing on Manage Events.....	159
Table 5.9: Functionality Testing on Manage FAQ	161
Table 5.10: Functionality Testing on Manage Faculty Announcement	162
Table 5.11: Functionality Testing on Manage Classes.....	163
Table 5.12: Functionality Testing on Manage Class Announcement.....	165
Table 5.13 Functionality Testing on Carry Out Conversation with the Chat Bot	166
Table 5.14: Feedback Result from a lecturer of FCSIT UNIMAS.....	170
Table 5.15: Feedback Result from a faculty administrator of FCSIT UNIMAS.....	171
Table 6.1: Summaries of Objectives and Achievements.....	173

ABSTRACT

WhatsApp Messenger is one of the most used instant messaging applications used among university students. WhatsApp is widely use in communication among students in the form of both personal messages and group chats. However, individuals nowadays must consult others or search the Internet to obtain the process to apply for any services offered by the faculty and it takes a long time to obtain the accurate information but sometimes the answers received are inconsistent. Also, overloading of information in group chats often caused overlooking of important messages. In response to this, this project aimed to develop a WhatsApp chatbot to solve these problems by offering a centralized platform for both faculty personnel and students to carry out information sharing and message delivering. According to the literature review, there are three existing chatbot system that provides automated chat services and two research articles that discussed about the revolution of chatbots. The methodology used throughout the development is Agile Kanban Methodology which promotes the use of a Kanban board to visualize the development stages. A questionnaire was distributed to gather opinions and suggestions from targeted users which is the FCSIT community. Finally, logical and physical designs are produced to enable stakeholders to have an overall view of the structure and the flow of the system.

ABSTRAK

WhatsApp Messenger adalah salah satu aplikasi pemesejan segera yang paling banyak digunakan dalam kalangan pelajar universiti. WhatsApp digunakan secara meluas dalam komunikasi dalam kalangan pelajar dalam bentuk kedua-dua mesej peribadi dan sembang kumpulan. Walau bagaimanapun, individu sekarang harus berunding dengan orang lain atau mencari Internet untuk mendapatkan proses untuk memohon mana-mana perkhidmatan yang ditawarkan oleh fakulti dan ia mengambil masa yang lama untuk mendapatkan maklumat yang tepat tetapi kadang-kadang jawapan yang diterima tidak konsisten. Selain itu, terlalu banyak maklumat dalam sembang kumpulan sering menyebabkan mesej penting diabaikan. Sebagai tindak balas kepada ini, projek ini bertujuan untuk membangunkan chatbot WhatsApp untuk menyelesaikan masalah ini dengan menawarkan platform terpusat untuk kedua-dua kakitangan fakulti dan pelajar untuk menjalankan perkongsian maklumat dan menyampaikan mesej. Menurut kajian literatur, terdapat tiga sistem chatbot yang sedia ada yang menyediakan perkhidmatan perbualan automatik dan dua artikel penyelidikan yang membincangkan mengenai revolusi chatbot. Metodologi yang digunakan sepanjang pembangunan adalah Metodologi Agile Kanban yang mempromosikan penggunaan papan Kanban untuk memvisualisasikan peringkat pembangunan. Soal selidik diedarkan untuk mengumpulkan pendapat dan cadangan daripada pengguna yang disasarkan iaitu komuniti FCSIT. Akhirnya, reka bentuk logik dan fizikal dihasilkan untuk membolehkan pihak berkepentingan mempunyai pandangan keseluruhan tentang struktur dan aliran sistem.

CHAPTER 1: INTRODUCTION

1.1 Background

WhatsApp is an instant messaging application which serves the purpose of replacing SMS (short message service) with a cross-platform mobile messenger application that's works whenever devices are connected to the internet (Yeboah & Ewur, 2014). In university, WhatsApp is widely used in informal communication between students, group discussions about various projects or assignments, as well as information sharing among lecturers, faculty admins and students. (Joicy & Sornam, 2018).

Due to the rapid development of technology, a chatbot is introduced to simulate human conversation in the form of text and sound. Companies nowadays such as Spotify and Sephora utilized chat bot as their virtual assistant to answer customers' queries and learn every customer's behavior based on conversations from time to time (Kim, 2018). The presence of chatbot supports automation of replies for similar queries, managing human resources on more important and qualitative tasks as well as improvement of business with the least effort ("Top 10 Reasons: Why Your Business Need A Chatbot Development", 2018).

This project proposes to integrate both WhatsApp and the development of chatbot by creating a WhatsApp chatbot for FCSIT community. The chat bot will serve the purpose of providing a centralized platform to answer queries and delivering messages to users. Furthermore, this project will develop a website to provide a medium for authorized personnel to program that chatbot, such as changing query's answer, delivering messages to related users and modify the chatbot's reply when an input is received. Upon successful implementation of the project, the chatbot aims to replace the current system and grows into the main source of information for FCSIT community.

1.2 Problem Statement

As a part of FCSIT community, one deserves to obtain the latest and relevant information available without any obstacle in the least amount of time. Information must reach out to users immediately whenever it's necessary. To assist the delivery of information and messages, WhatsApp is widely used among FCSIT community.

However, there exists some flaws in information sharing among FCSIT community. Individuals nowadays must consult others or search the Internet to obtain the process to apply for any services offered by the faculty. Furthermore, it takes a long time to obtain the accurate information but sometimes the answers received are inconsistent. Moreover, a significant amount of effort is required for faculty personnel to answer similar students' queries as students will face similar problems every academic semester. As for information regarding lectures and events happening around, there exists a WhatsApp group which every related user is included to ease the sharing of information. Yet, the overloading information shared in a WhatsApp group caused users having troubles to keep track of the latest information shared in the group chat, and there exists a huge number of unimportant messages which caused the overlook of important information.

In response to these problems, this study proposes to create a personalized WhatsApp chatbot. The chatbot will simulate the actions and response of faculty admins or lecturers to deliver the accurate information in the form of WhatsApp personal messages. Hence, this will solve the overlook of important messages, as well as providing a medium for users that are afraid to ask question in the group chat to insert queries without worrying of asking the wrong question. This project is inspired by AVA (AirAsia Virtual Allstar), a chatbot which assist the company's staff in responding different inquiries from customers all around the world.

1.3 Aims and Objectives

The aim of this project is to develop a WhatsApp chatbot and a website to allow authorized users to program the chat bot. The objectives are:

- To analyse requirements and design a WhatsApp chatbot for FCSIT community.
- To develop a WhatsApp chatbot that delivers announcements, answers users' queries based on selections provided by the chatbot.
- To provide a web template for faculty admins and lecturer to program the chatbot.

1.4 Scope

This project will develop a WhatsApp chatbot for FCSIT community. The WhatsApp chat bot will consist of the chat bot itself in the form of WhatsApp messages, and a Content Management System-like website to program the chat bot. The initiative of the project is to increase and optimize the performance of information sharing (For example: class announcements, events happening around and Frequently Asked Questions) among FCSIT community. The limitation of the WhatsApp chatbot would be the chatbot can only receive input in English language and users are advised not to report the chatbot messages as spam message as WhatsApp will ban the WhatsApp number if the number of reports exceeded certain limits. The assumptions of the project would be every user have installed WhatsApp on their smartphones, as well as the WhatsApp Application Programming Interface can be integrated with the backend of the chatbot. This project will focus on FCSIT community, and will be including a dedicated website to program the chat bot.

1.5 Methodology

The software development methodology that will be used throughout the project is Agile Kanban methodology. An online Kanban board will be used to manage the entire workflow. The reason behind choosing an Agile Kanban Methodology is that the presence of Kanban board eases the management of the entire workflow, as well as visualizing and categorizing different stages of the WhatsApp chatbot development.

There are three main principles that will be applied in this software methodology. First, the entire development will be visualized in a Kanban board, this helps in managing the status and progress of each part of the work. Next, limiting WIP (Work in Progress) is essential to prevent overloading of work, as well as idleness of current active parts. Continuous measure and improvement will be applied in this methodology as changes can be made immediately whenever there is change in requirements.

In the Kanban Board, different development stages can be determined. In this project, the software development processes are divided into:

- Product backlog

Product backlog consist of different categories, depending on the current progress of the chatbot development. Items that are in the backlog are usually phases that are not directly related to the current development process. Any changes will be recorded into the backlog to prevent overlooking when the development stages change.

- Requirements

The requirements consist of the basic requirement of the chatbot. Also, requirements from every stakeholder will be recorded for future referencing. Requirements are important as it will always be referred during the development process.

- Design

The design part will include every design aspect of the project. The included designs will be the design of user interface for administrator's website, the design of the flow of the chat bot, as well as the static and behavioural diagrams.

- Development

Development stage will include every technical part of the project. The main features will be separated into different parts, and there will be subtasks linked to every parent issue, to ensure the consistency of the development process. Errors such as bugs will be recorded to keep the tasks in view.

- Testing

Testing stage will record every comment from users to keep track of feedbacks, as well as recording problems and bugs encountered during the testing phase. Stakeholders can view each test cases and make comments the project's refinement.

- Done

Completed tasks will be moved into this section, to indicate the completion of an item. The records in this section will act as a medium to update the stakeholders about the progress, thus easing the stakeholders in keeping track of the overall progress.

1.6 Significance of Project

Upon successful implementation of the project, the WhatsApp chatbot will become the main source of information regarding class, events and FAQ for the FCSIT community. It will bring benefits to every stakeholder such as students, lecturers and faculty staffs/ administrator.

The WhatsApp chatbot will benefit the users in terms of consistency in accurateness of queries answer, and ensuring the messages are delivered parallelly to every user in the same time. Hence, it will solve the overlooking of important messages. In terms of announcement from lecturers, faculty lecturers can utilize the website provided to update the latest status regarding respective lectures, as well as delivering important messages such as exam dates and assignment submission date to every related student that is registered to the course. As for faculty admins/ staffs, the chatbot will help them by reducing their effort to answer repeating queries from student every semester. Other than that, the admins can log into the website to modify the chatbot's replies and insert new queries' keywords and answers to the chatbot so that the chatbot can answer students' queries.

In conclusion, the WhatsApp chatbot aims to become the main communication medium between students and faculty admins, lecturer and staffs. Moreover, the chatbot will improve and enhance the efficiency of information sharing and message delivering among FCSIT community.

1.7 Project Schedule

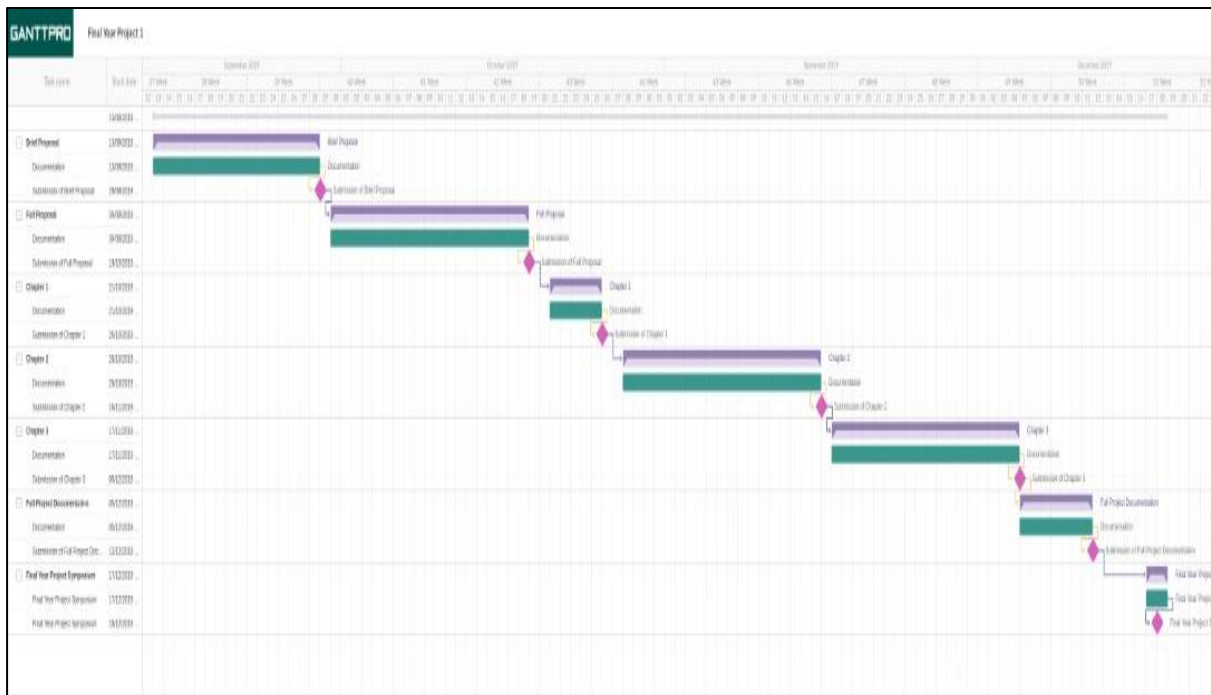


Figure 1.1 Project Schedule

Figure above shows the overall schedule of the first half of the project. The planning of the project will take about 4 months to ease the implementation of the project. In the planning phase, there are several critical parts to be completed.

In brief proposal documentation, brief idea of the project is noted down and discussed with supervisor. Ideas are then refined and improved after the discussions with supervisor. The documentation will take about 2 weeks, started from 13th September 2019 and submitted on 29th September 2019. The full proposal will include the full introduction/ background of the project, problem statement, methodology and so on. Every aspect is included in the full proposal and will be reviewed by supervisor. The documentation will take about 3 weeks, started from 30th September and submit on the 19th of October.

After the full proposal is submitted, add-ons and refinement will be added into Chapter 1. Chapter 1 will consist of several elements from the full proposal, with some fine-tuning after feedbacks from supervisor and examiner. The documentation for Chapter 1 will start from 21st

October and submit on 26th of October. Chapter 2 will be the literature review of other projects that are similar with the WhatsApp chatbot proposed in this project. The descriptions of the reviewed chatbot will be included in Chapter 2 and compared with the WhatsApp chatbot project. The documentation for Chapter 2 will start from 28th October and submit on 16th November.

Chapter 3 will be the research methodology of the project. System design will be included in the documentation, and questionnaire will be prepared for data gathering for the project. The documentation for Chapter 3 will start from 17th November and submit on 5th of December. The final project documentation will include all the chapters with refinements. The documentation will start from 5th December and submit on 12th December. Finally, the FYP Symposium will be held on the 23rd and 24th of December 2020.

1.8 Expected Outcome

The outcome of the project would be:

- A WhatsApp chatbot that answers users' queries in the form of natural language based on information provided to the chatbot.
- A web page that allows faculty admins and lecturers to update the latest information so that the chatbot can provide the latest and accurate answer to users.
- A WhatsApp chatbot that can deliver WhatsApp messages containing useful information to the related users.

1.9 Project Outline

This project consists of five chapters which are introduction, literature review, requirement analysis and design, implementation and testing, conclusion and future work.

1.9.1 Chapter 1: Introduction

Chapter 1 provides the overview of the project and consists of background, problem statement, aims and objective, brief methodology, scope, significant of project, project schedule, expected outcome, project report outline and summary.

1.9.2 Chapter 2: Literature Review

The literature review will include the review of existing systems that are similar with this project. Analysis will be carried out to determine the strengths and weaknesses of the reviewed systems. Comparison will be made to differentiate between the existing project and the WhatsApp chatbot.

1.9.3 Chapter 3: Requirement Analysis and Design

In Chapter 3, requirements gathering will be carried out to construct the design of the WhatsApp chatbot. Detailed information about the methodology used which is Agile Kanban Methodology will be included in Chapter 3. Furthermore, the logical and physical design will be included in Chapter 3 to present the entire system flow and structure of the WhatsApp chatbot.

1.9.4 Chapter 4: Implementation

The implementation will be included in Chapter 4. Every function included in the system design will be coded out and tested from time to time. Also, the implemented system interface will be included in Chapter 4.