



**C3399C Virtual Assistant
Coursework
Report Submission Cover Page**

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
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1 Introduction

1.1 Background

Many commercial properties and social clubs provide scheduled shutter bus services between their properties and pickup locations. Often the schedules are shown on notice boards and published on websites. A chatbot for private shutter bus services may bring about greater convenience for visitors.

1.2 Objectives

The objective of this chatbot is to provide information on shutter bus services for Goodlife Club and AI Hub Park with the schedules as below:

Day	Pickup Points	
	Clubhouse	Pasir Ris Mrt
Weekday	1:00pm, 3:00pm 5:00pm, 7:00pm	1:30pm, 3:30pm 5:30pm, 7:30pm
Weekend	1:00pm, 2:00pm, 3:00pm, 4:00pm 5:00pm, 6:00pm, 7:00pm	1:30pm, 2:30pm, 3:30pm, 4:30pm 5:30pm, 6:30pm, 7:30pm

Table 1 – Shuttle bus schedule for Goodlife Club

Day	Pickup Points		
	Clementi MRT	Block A	Block B
Weekday	8:00am, 8:30am 9:00am	5:00pm 6:00pm, 7:00pm	5:15pm 6:15pm, 7:15pm
Weekend	No service	No service	No service

Table 2 – Shuttle bus schedule for AI Hub Park

The chatbot will have the following capabilities:

1. Provide contextual information based on the time of request e.g. if request for Goodlife Club shuttle service at Pasir Ris MRT at 4 p.m. on Monday, the chatbot should reply with the remaining schedules for Monday i.e. 5:30p.m. and 7:30p.m.
2. Provide pickup points for property of interest i.e. Goodlife Club and AI Hub Park.
3. Provide shuttle bus service schedule (both weekday/weekend) for property of interest i.e. Goodlife Club and AI Hub Park.

2 Conversation Design

The conversation flow of the chatbot is divided into both main and alternate flow paths to cater for all situations encountered.

2.1 Main

The main conversation flow is designed such that the user is presented with 3 options corresponding to each objective stated in section 1.2. Buttons are used to allow user to select property/ pickup points so as to minimize nput error.

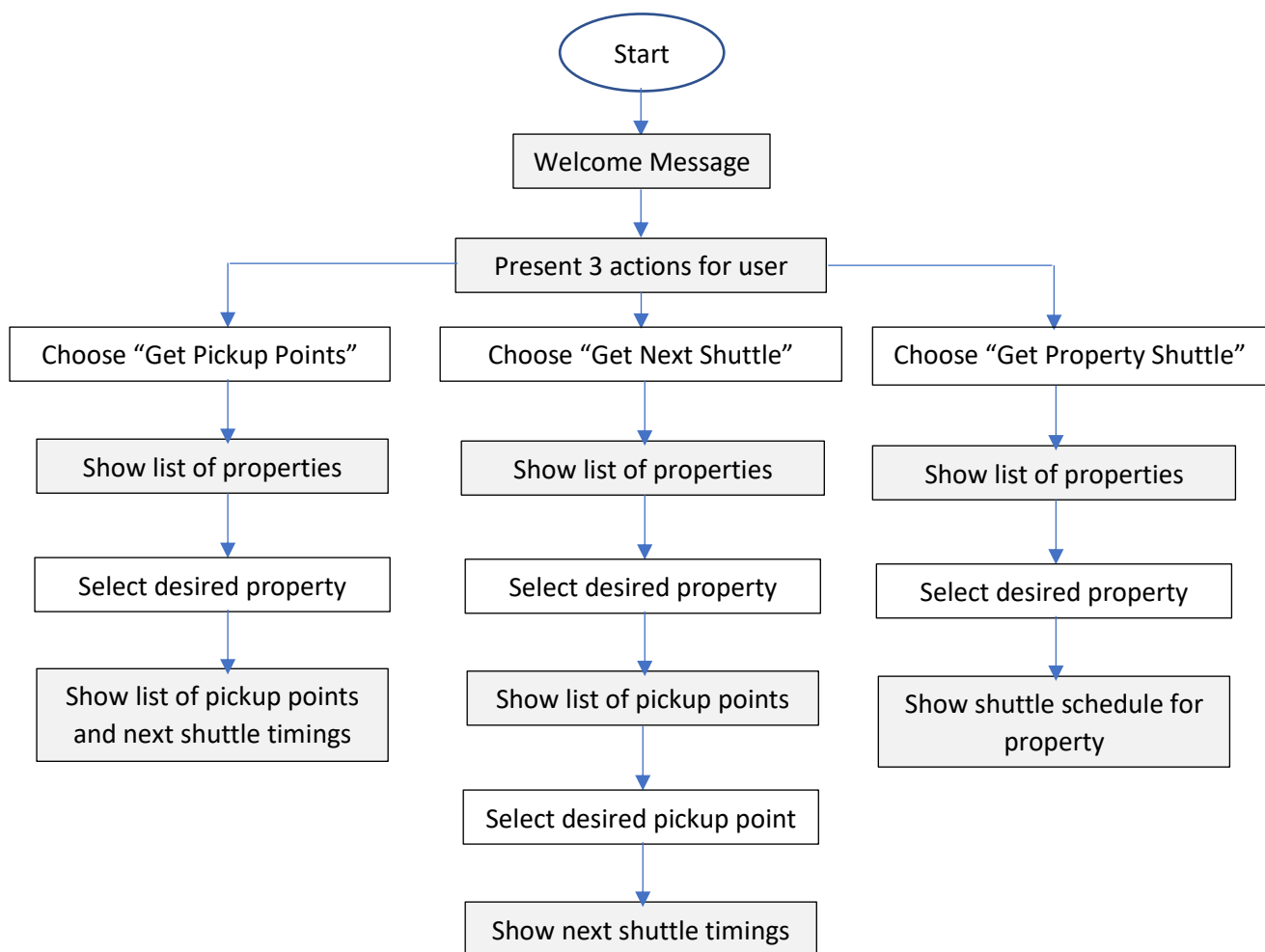


Figure 1 - Conversation Flow

2.2 Alternate

In case the user deviate from the main conversation flow path e.g. type in invalid property/pickup point name, the chatbot will inform the user to re-select the service required handled by the "Default.Fallback" intent.

3 Implementation

3.1 Intents

For each action as shown in the Conversation Flow diagram (Figure 1), an intent is created to service the request from the user as listed below:

s/n	Action	Intent	Purpose	Parameters
1	-	Default.Welcome	Greet user and offer services available	-
2	-	Default.Fallback	Handles unexpected user responses	-
3	-	Default.ConnectionTest	Tests connection to webhook service	-
4	Get Pickup Points	Get.PickupPoints	Get pickup points for specific property	property
5	Get Next Shuttle	Get.NextShuttle	Get remaining shuttle service timings for specific property and pickup location for the current day	property, pickup_point
6	Get Property Shuttle	Get.PropertySchedule	Get all shuttle service timings for specific property	property

Table 3 - Action-Intent Mapping

3.2 Entities

The list of entities created for property and pickup location names are as defined below:

s/n	Entity	Description	Examples
1	landmark	Property names	Goodlife Club, AI Hub Park
2	pickup_point	Pickup location names	Clubhouse, Pasir Ris MRT

Table 4 – Entity List

3.3 Context

The “Get.PickupPoints”, “Get.NextShuttle” and “Get.PropertySchedule” intents are assigned one input context “ctx.get” to control the conversation flow to start from the “Default.Welcome” intent.

3.4 Fulfilment

Webhook for query of bus shuttle schedules is developed as a Flask web application and hosted on <https://shuttle-bot.herokuapp.com/webhook>.

The table below shows the intent/action/webhook function mapping:

s/n	Intent	Action	WebHook Function	Parameters required
1	Default.Welcome	input.welcome	welcome	-
2	Default.Fallback	input.unknown	Fallback	-
3	Default.ConnectionTest	test_connection	test_connection	-
4	Get.PickupPoints	get_pickuppoints	get_pickuppoints	property
5	Get.NextShuttle	get_nextshuttle	get_nextshuttle	property, pickup_point
6	Get.PropertySchedule	get_propertyschedule	get_property_schedule	property

Table 5 – Intent/Action/Webhook Mapping

3.5 Integration

This chatbot is enabled for Telegram integration and makes use of rich message formats as defined in the Telegram Bot API.

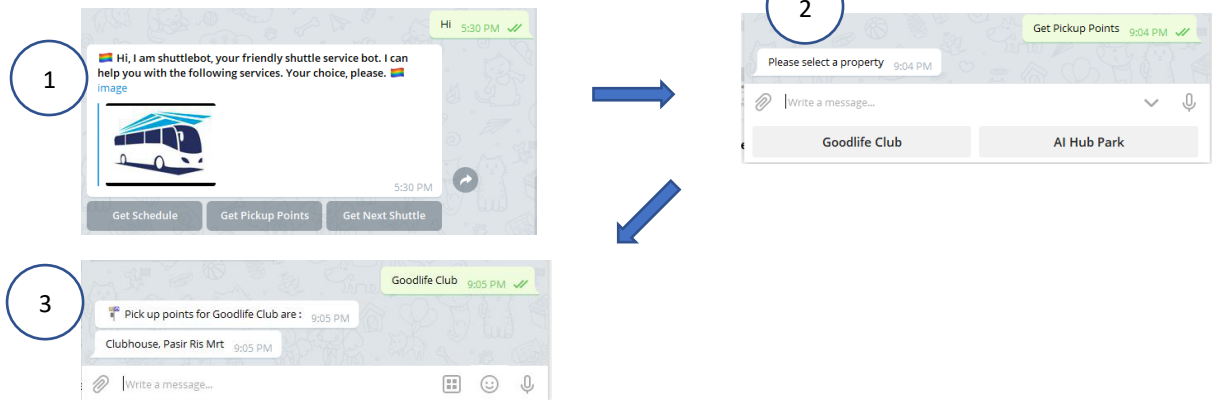
3.6 Screenshots

The following sections illustrates the user/ chatbot interaction messages for the different capabilities of the chatbot:

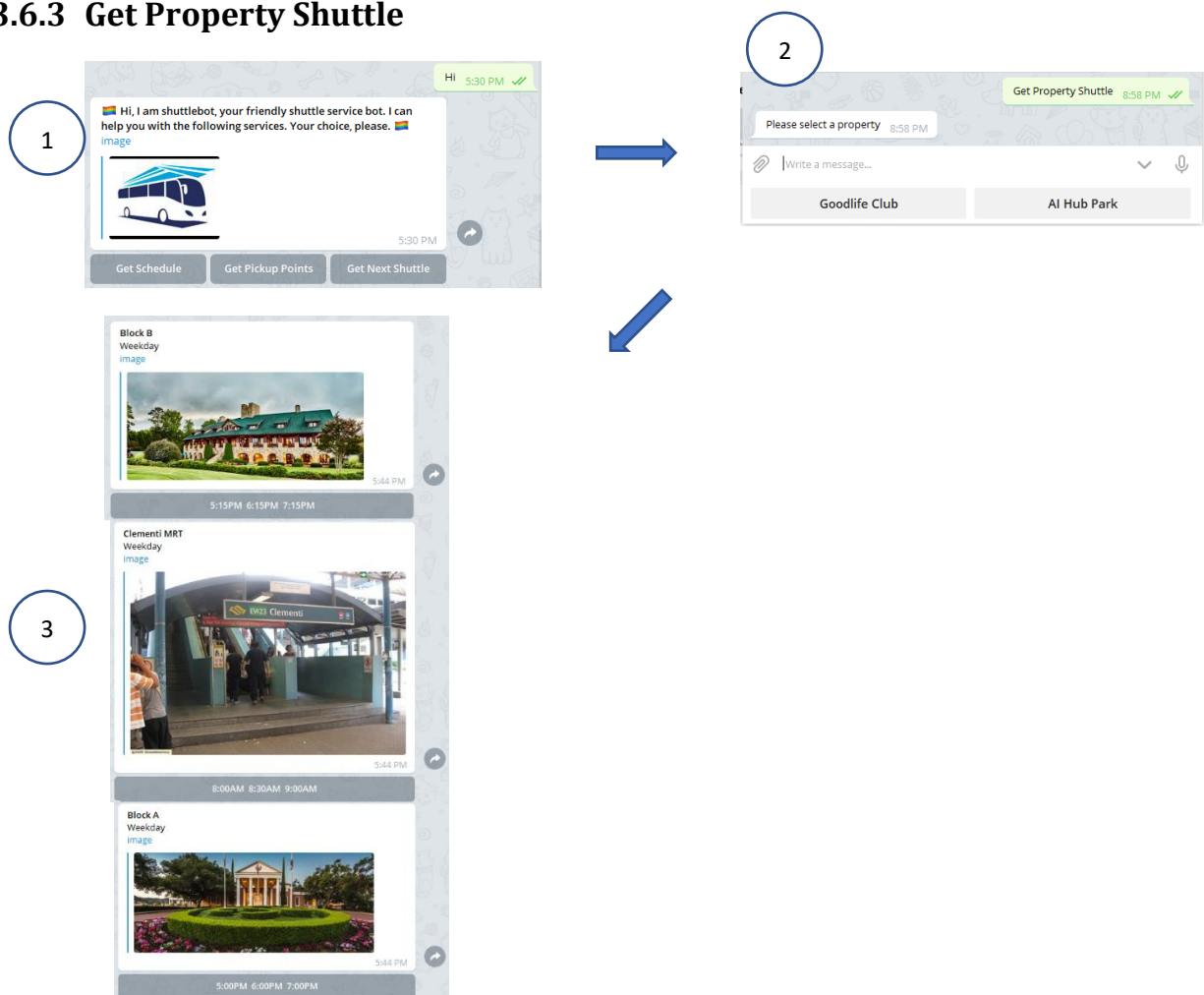
3.6.1 Get Next Shuttle



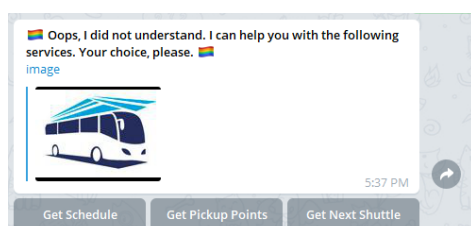
3.6.2 Get Pickup Points



3.6.3 Get Property Shuttle



3.6.4 Fallback



4 Getting Started

4.1 Telegram

The Telegram botname is **ShuttleMasterBot**. Enter “ShuttleMasterBot” in the Telegram search box and the bot details will be displayed as below:

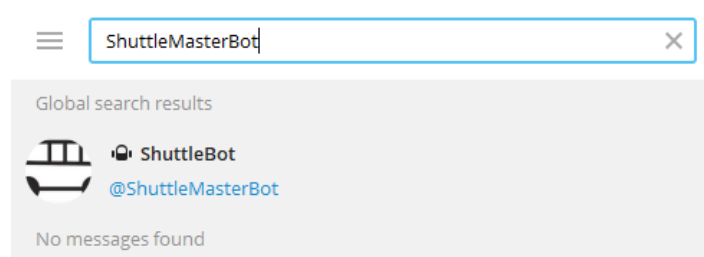


Figure 2 – ShuttleBot in Telegram

4.2 DialogFlow

To access the ShuttleBot agent configuration, import the “*ShuttleBot_Agent.zip*” file from the “*DialogFlow_Agent*” folder into DialogFlow using the “Restore From Zip” function in the “Export and Import” tab of the agent settings page.

After the restore operation is complete, the ShuttleBot agent configuration will be displayed as below:

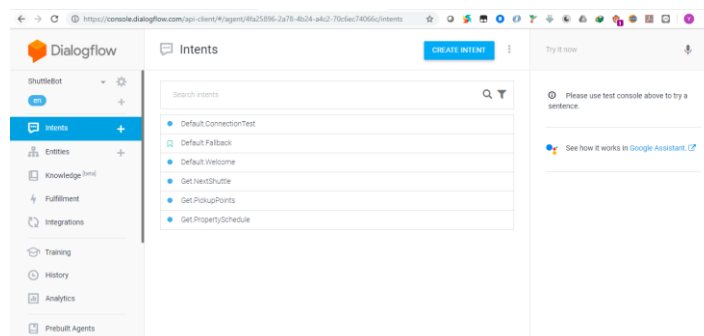


Figure 3 – ShuttleBot DialogFlow Agent

5 References

1. Telegram Bot API Documentation, <https://core.telegram.org/bots/api>
2. DialogFlow Rich Messages Doc , <https://dialogflow.com/docs/intents/rich-messages>
3. *Artificial Intelligence in Robotics*, International Federation of Robotics Frankfurt, Germany, May 2018