code.sprint^{MT}

TASK BOOKLET

- Qualifiers Round -

Post-Secondary Category

2023

ICE Malta

Qualifiers Round Schedule

Task Analysis (10 min)

Task Development (60 min)

Interval (15 min)

Continuation of Task Development (60 min)

Task Submission (5 min)

TOP 10 FINALISTS ANNOUNCED!
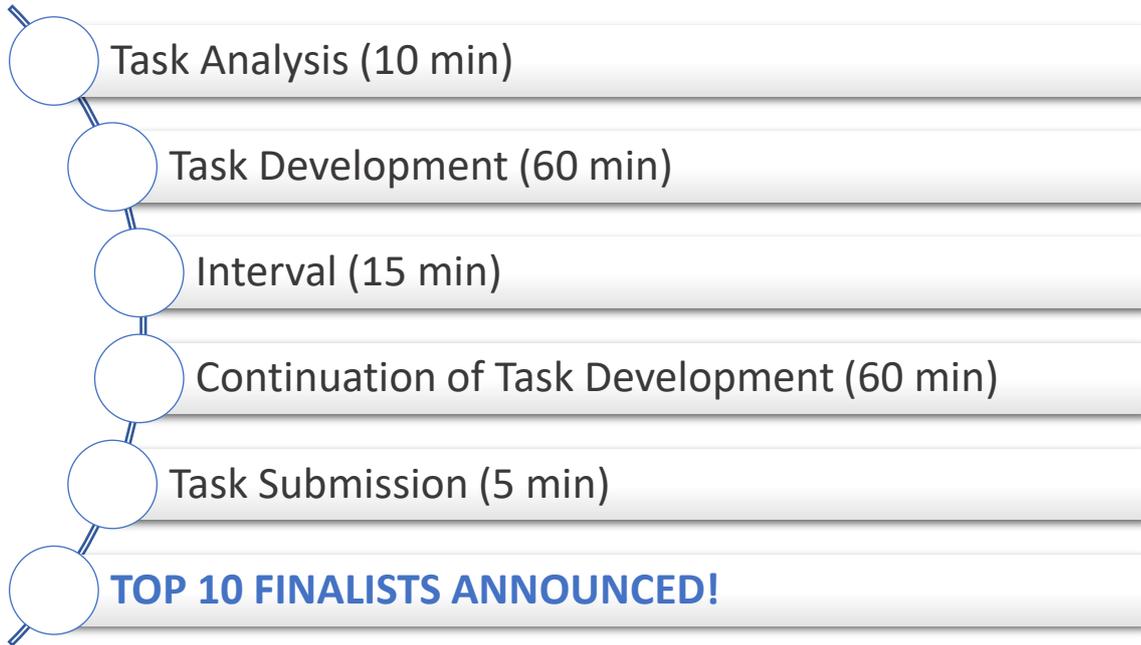
BELLAMARIS Yacht Chartering (120 minutes)

In this coding challenge, you are tasked with creating a text-based chatbot for Bellamaris, a premier Maltese yacht chartering agency. The chatbot will serve as a virtual assistant, guiding users through the process of planning their perfect yacht trips. Your mission is to develop a chatbot that interacts with users, collects their preferences, and provides tailored suggestions for available yachts and captivating itineraries.

Your solution should include a user-friendly interface, suggestion mechanism, robust validation and error handling processes. Are you ready to embark on a coding voyage and create an exceptional yacht chartering experience with Bellamaris? Let's set sail!

Functionality #1: Available Yachts & Itineraries

Bellamaris offers a wide range of luxurious yachts and captivating itineraries that allow travellers to explore the stunning coastal wonders of Malta, Comino, Gozo, Tunisia, Sicily, and Sardinia. Bellamaris packages include a dedicated staff to assist guests throughout the trip, as well as onboard food options and an open bar for the entire duration of the itinerary.

Find in table 1 and table 2 below, a dataset of available yachts, and the available itineraries that highlight the most picturesque coastal spots in each destination.

Yacht Name	Length (m)	Max Persons	Rental Fee per Day (€)
Serene Retreat	15	4	400
Coastal Explorer	18	6	500
Aqua Vista	20	8	600
Sea Breeze	22	10	700
Aqua Paradise	24	12	800
Coastal Serenity	25	14	900

Table 1: List of available yachts

Trip Title	Itinerary Route	Duration
Island Hopper	Malta → Gozo (Ramla Bay) → Return to Malta	1 days
Coastal Escape	Malta → Gozo (Xlendi Bay) → Gozo (Marsalforn Bay) → Comino (Blue Lagoon) → Return to Malta	2 days
Coastal Expedition	Malta → Gozo (Dwejra Bay) → Tunisia (Bizerte) → Comino (Santa Maria Bay) → Return to Malta	3 days
Sicilian Sojourn	Malta → Sicily (Palermo) → Sardinia (Olbia) → Tunisia (Bizerte) → Return to Malta	4 days
Tunisian Adventure	Malta → Tunisia (Bizerte) → Tunisia (Hammamet) → Sicily (Agrigento) → Return to Malta	5 days
Gems of the Mediterranean	Malta → Malta (Round Maltese Coast) → Tunisia (Bizerte) → Sicily (Taormina) → Sardinia (Costa Smeralda) → Sicily (Cefalu) → Return to Malta	6 Days
Mediterranean Odyssey	Malta → Tunisia (Bizerte) → Tunisia (Hammamet) → Sicily (Taormina) → Sicily (Agrigento) → Sardinia (Costa Smeralda) → Sardinia (Olbia) → Return to Malta	7 days

Table 2: List of available itineraries

Functionality #2: Chatbot Mechanism

1. The chatbot is to follow a hard coded conversation sequence as per diagram 1 below.

2. The chatbot's conversations (prompts) will be hard-coded, and at each step, the chatbot should have three different replies, with one reply chosen at random to create a more interactive and realistic chatbot experience. The chatbot reply options are provided in Table 3 below.

3. For a more realistic conversation, when the chatbot asks the user whether to continue the conversation or not, it should 'recognise' several alternative user replies. Check Table 4 below, for the alternative replies.

4. The user has the option to leave any of the criteria (number of guests, days, and budget) empty when prompted by the chatbot.

5. The chatbot should only provide feedback when the user enters data (or not) for all required criteria.

   For example, if the user enters 50 for the number of guests, the chatbot should proceed to request for the number of days without explicitly stating that BELLAMARIS does not own a yacht to cater for 50 guests.

6. The chatbot should show a warning message when the user leaves all the search criteria empty. The warning message should be randomly chosen from the 'No Criteria Message' options in table 3.
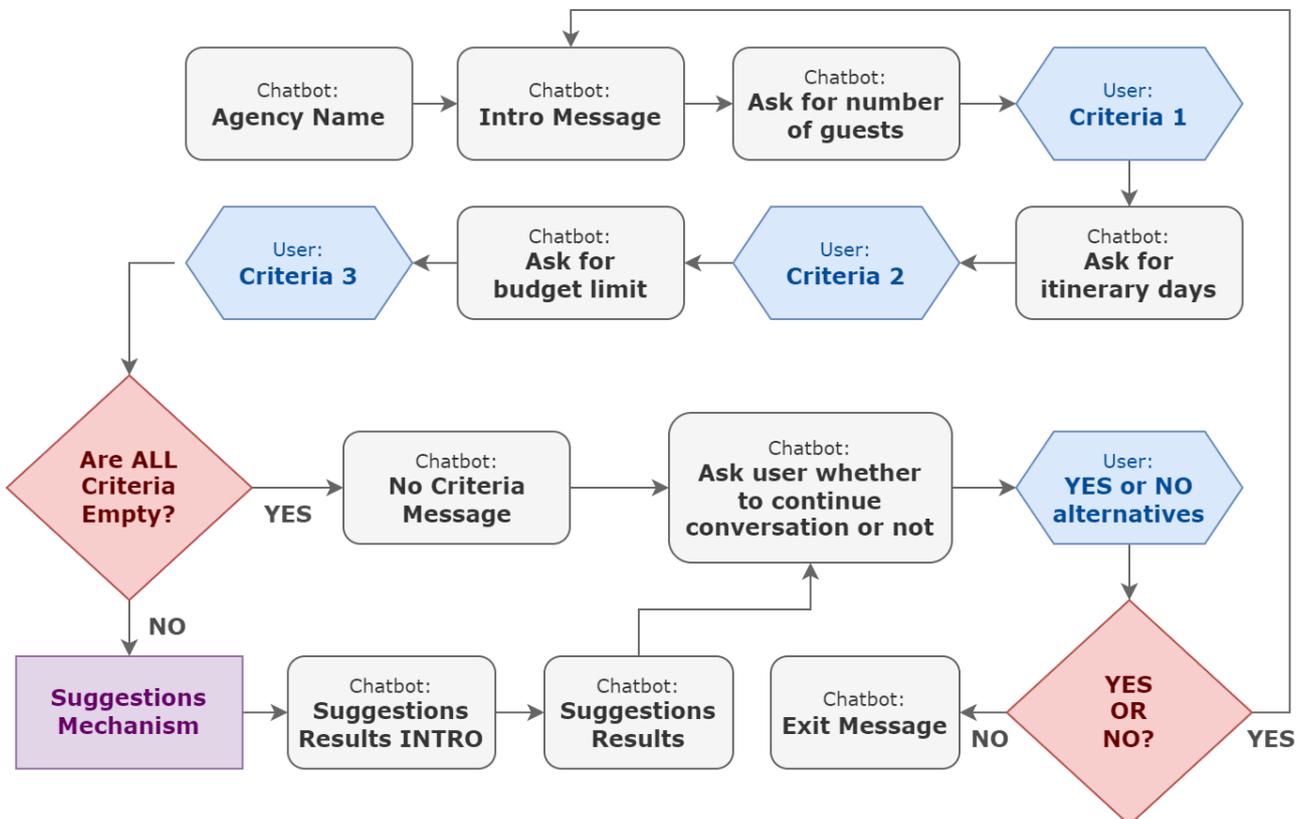

Diagram 1: Conversation sequence

Intro Message	Fill in or skip any of the criteria & we'll create a customized plan for you! ✨
	Provide what you want or skip as desired. Get ready for an incredible experience! 💥
	Fill in or skip criteria: we'll curate an amazing plan tailored to your preferences! 💡
Ask For Number Of Guests	How many people are traveling with you? 🧗
	Who's joining the adventure? Headcount, please! 🧑
	Let's get the gang together! How many travellers in tow? 👫
Ask For Itinerary Days	Time to plan your itinerary! How many days are we talking? 📅
	Counting the days! How long do you want your adventure to be? 📆
	Itinerary duration? Spill the beans on how many days you've got! ⏳
Ask For Budget Limit	What's your spending limit for the trip? 💸
	How much are you looking to splurge on this adventure? 💹
	What's the budget you've set aside for your trip? 💲
No Criteria Message	Oops! Can't work with nothing. Give me something to work with! 😅"
	Upps! Can't work with empty fields. Fill 'em up & let's make magic happen! ✨
	Hold on! I need a little input to provide suggestions. Get those fields spiced up! 🔥"
Suggestion Results Intro	Ready for adventure? Here are some epic itineraries for you! 🌍
	We've got options! Check out these suggested itineraries. 🗺️
	Voila! Here are some fantastic itinerary options that match your preferences. ⛰️
Unrecognised Message	🚨 Oops! Invalid input. Please try again!
	❌ Uh-oh! That message didn't work. Can you give it another shot?",
	❗ Hmm, something's not right with that message. Try again?
Exit Message	Happy travels! Reach out if you need any more assistance. 👋
	Bon voyage! We're here whenever you're ready for your next adventure. 😊
	Have a fantastic trip! Feel free to contact us anytime for more travel tips. ✨

Table 3: Chatbot conversation options

"YES" alternative user replies	"yes", "yeah", "sure", "absolutely", "definitely", "affirmative", "of course", "certainly", "yup", "yep", "yepp", "ok", "okay", "continue", "proceed".
"NO" alternative user replies	"no", "nah", "nope", "not really", "negative", "i don't think so", "no way", "not interested", "i'm afraid not", "i'll pass", "not at all", "stop".

Table 4: Yes/No Alternative replies that the chatbot recognises.

Functionality #3: Suggestions Mechanism

1. Develop a mechanism that suggests available yachts and itineraries based on the user's preferences, i.e., number of people, trip duration, and budget.

2. The Suggestion Mechanism can be programmed using various algorithms, such as the sample suggestion mechanisms shown in table 5. You may use the suggested algorithms or develop one of your own.

3. Your work should include a description of how the Suggestion Mechanism works. This must be included as in-line text (comment) in the source code.

Filtered Search by Guest Capacity	The chatbot can filter out yachts that do not accommodate the specified number of guests and suggest the options that meet the guest capacity requirement.
Duration Optimization	The chatbot can analyse the available itineraries and suggest options that align with the user's specified number of itinerary days, starting from the closest match.
Budget-Friendly Options	The chatbot can filter out yachts and itineraries that exceed the specified budget limit and suggest options that are within or closest to the user's budget, prioritizing affordability.
Comprehensive Matching Algorithm	The algorithm can assign weights to each criterion based on their relevance to the user's preferences. It can then calculate a matching score for each option, considering factors such as guest capacity, duration, and cost. The options with the highest matching scores can be suggested to the user, indicating the best possible matches that align with all their criteria.

Table 5: Sample Suggestion Mechanisms.

Functionality #4: Validation Processes

Validation is required on the instructions inputted by the user.

1. Instructions are not case sensitive.
2. Number of people, days and budget should include numbers only.
3. If the user enters a decimal number for these criteria, only the integer part is used as a search criterion.
4. Unrecognised 'YES' and 'NO' user replies, as per the alternative replies in table 3, should be treated as unrecognised.
5. A warning message should be prompted for unrecognised instructions. The warning message is to be randomised from the 'Unrecognised Message' options in table 3.
6. Validation is required to avoid any possible runtime error/s.

Functionality #5: User Interface

Develop a text-based user interface for the chatbot that allows users to interact with the chartering service. Ensure that the user interface is intuitive, user-friendly, and visually appealing, enhancing the overall user experience. Use visual cues and formatting effectively such as indentation borders, etc. Check sample interface in screenshot 1 below.

```
************************
*  BELLAMARIS CHATBOT  *
************************

Fill in or skip criteria: we'll curate an amazing plan tailored to your preferences! 💡
How many people are traveling with you? 🚶
>> 5

Counting the days! How long do you want your adventure to be? 📅
>>

What's the budget you've set aside for your trip? $
>>1600

Ready for adventure? Here are some epic itineraries for you! 🌍

Ideal Suggestion
----------------
Coastal Expedition
3-Day Itinerary as follows:
Malta ➡ Gozo (Dwejra Bay) ➡ Tunisia (Bizerte) ➡ Comino (Santa Maria Bay) ➡ Return to Malta
Aboard the 18m 'Coastal Explorer' yacht for a maxmum of 6 persons
Total cost of Eur1500 including dedicated staff to assist guests throughout the trip,
as well as onboard food options and an open bar for the entire duration of the itinerary.


Alternative Suggestion
------------------
Sicilian Sojourn
4-Day Itinerary as follows:
Malta ➡ Sicily (Palermo) ➡ Sardinia (Olbia) ➡ Tunisia (Bizerte) ➡ Return to Malta
Aboard the 15m 'Serene Retreat' yacht for a maxmum of 4 persons
Total cost of Eur1600 including dedicated staff to assist guests throughout the trip,
as well as onboard food options and an open bar for the entire duration of the itinerary.

Hope these suggestions are up to your liking
Anything else which we can help you with?
>> Le

! Hmm, something's not right with that message. Try again?
>> Nope

Happy travels! Reach out if you need any more assistance. 👋
```

Screenshot 1: Sample User-Interface

Name the class containing the main method **RunApp.**

Submit your program in a folder named **Bellamaris**

Assessment Rubric

Program Functionality	User-Friendly Interface	Proper use of comments	Proper Conventions (Camel case, meaningful var names etc.)	Name of Folder & Class/es	User Input	Suitable Prompts / Messages displayed	Proper use of data structures and/or files

Validations					Randomising chatbot responses	Modular Code	Code Efficiency
Guests Number	Itinerary Duration	Budget	Yes Reply	No Reply			

Suggestion Mechanism					
Suggesting according to guests only	Suggesting according to duration only	Suggesting according to budget only	Suggesting as per user's preferences (Taking into consideration more than one criterion)	Suggesting alternative suggestions close to user preferences	Suggestion Mechanism Description (In-line text)

Maximum Score: 44
+ 2 for every extra feature

0 – Not Satisfactorily | 1- Partly Satisfactorily | 2- Entirely Satisfactorily