C951

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Task 1

1. Explain the functionalities of the chatbot and how they will meet the needs described in the scenario.

* The chatbot is designed to address the needs described in the scenario by providing personalized career guidance to computer science students, leveraging structured interactions and user-friendly features. Below is an explanation of its functionalities and how they align with the scenario’s requirements.

1. Initial Interaction and User Engagement

• Functionality:

The chatbot begins by introducing itself as a career advisor and asking if the user would like a job suggestion. It ensures the user is aware of its purpose and guides them into the interaction flow with clear instructions.

• Example Interaction:

• Chatbot: “Hello. I am the career advisor bot. Would you like a suggestion for a job based on your skills and preferences?”

• User: “Yes.”

• How It Meets the Need:

This functionality mimics the initial conversation a student might have with a career advisor, providing a welcoming and guided entry point to explore career options.

2. Degree-Based Filtering

• Functionality:

The chatbot asks the user for their degree and adjusts its responses based on their input. If the degree is “Computer Science,” it proceeds to ask about specific interests and proficiencies. If the degree is “Other,” it acknowledges the limitation of suggestions but offers to show relevant options for Computer Science or Education.

• Example Interaction:

• Chatbot: “What is your degree in?”

• User: “Computer Science.”

• How It Meets the Need:

This ensures the chatbot remains relevant to students’ qualifications and aligns with the scenario’s focus on guiding computer science students toward appropriate computing careers.

3. Interest and Proficiency Assessment

• Functionality:

The chatbot uses carousels and buttons to present interest areas (e.g., AI, Cloud Computing, Programming, Design, Video Games). Based on the user’s selection, it provides tailored job suggestions, such as “Large Language Model Engineer” for AI or “Cloud Computing Engineer” for Cloud.

• Example Interaction:

• Chatbot: “What interests you or what are you proficient in?”

• User: “AI.”

• Chatbot: “You should look into being a Large Language Model Engineer.”

• How It Meets the Need:

This functionality mirrors how a career advisor would probe a student’s interests and strengths to recommend specific roles, making the chatbot both effective and user-friendly.

4. Structured and Easy Navigation

• Functionality:

The chatbot uses structured topics with <think><set name="topic"> to maintain context and ensure the conversation progresses logically. It includes buttons to simplify user responses and fallback mechanisms for unrecognized inputs (e.g., wildcard patterns). Users can also type “start over” to reset the conversation.

• Example Interaction:

• User: “What if I don’t understand?”

• Chatbot: “I don’t understand ‘What if I don’t understand.’ Please press a button or type a valid answer. If you forgot the question, type ‘repeat’ or ‘begin’ to start.”

• How It Meets the Need:

This structured approach minimizes confusion, accommodates varied user inputs, and ensures the chatbot remains accessible to students with different levels of technical proficiency.

5. Scalability and Automation

• Functionality:

By automating common queries and offering predefined career suggestions, the chatbot reduces the workload for career advisors. It is scalable to handle interactions with increasing numbers of students without additional human resources.

• How It Meets the Need:

This directly addresses the issue of rising enrollment and the inability of individual advisors to meet with every student, providing a consistent and automated career guidance tool.

Summary

The chatbot’s functionalities—such as user engagement, degree-based filtering, interest assessment, structured navigation, and automation—align closely with the scenario’s requirements. By guiding students through their interests and strengths and suggesting suitable computing careers, the chatbot replicates and enhances the support typically provided by a career advisor, ensuring all students receive timely and relevant guidance.

1. Identify**five** computing job types that your chatbot can recommend based on student interaction with the chatbot.

* LLM Engineer
* Backend Engineer
* Frontend Engineer
* Cloud Computing Engineer
* Game Developer

1. Provide the generated chatbot code files to support the**five** identified job types from part B.

* In attached file

1. Explain how the chatbot training cases were selected and how you used artificial intelligence markup language (AIML) to enhance the functionality of the chatbot. Provide examples of the chatbot’s functionality that represent the selected cases at the end of the training process in support of your explanation.

**Selection of Training Cases**

The training cases for the chatbot were selected to address common user scenarios based on career advisory needs. The focus was on creating a structured flow that guides users from initial interaction to a personalized career suggestion based on their degree and preferences. The cases were chosen to include a balance of:

1. Broad categories of degrees (e.g., Computer Science, Education, Other).

2. Sub-categories of interests and proficiencies to provide more specific recommendations (e.g., AI, Cloud Computing, Working with Kids).

3. Fallback scenarios to handle unexpected inputs (e.g., “Other” category or unrecognized inputs).

These cases ensure the chatbot can provide meaningful suggestions while maintaining flexibility to handle varied user inputs.

Use of AIML to Enhance Functionality

Artificial Intelligence Markup Language (AIML) was used to implement structured, conversational logic for the chatbot. Key features of AIML that were leveraged include:

1. Dynamic Topic Management:

The <think><set name="topic"></set></think> construct was used to maintain conversational context, allowing the chatbot to follow a logical flow across multiple exchanges. For instance, after the user answers whether they want a suggestion, the topic is updated to guide the next question based on their degree.

• Example:

<think><set name="topic">1</set></think>

2. Pattern Matching:

AIML’s <pattern> tags were used to define responses for specific user inputs, ensuring appropriate responses based on the user’s degree and interests. The use of structured patterns helped create a predictable and reliable interaction model.

3. Interactive Elements:

The chatbot uses buttons and carousels to streamline user interaction, reducing the need for users to type and minimizing the chance of errors. Buttons are implemented as:

<button>

<text>Computer Science</text>

<postback>computer science</postback>

</button>

4. Fallback Handling:

The chatbot includes a wildcard <pattern> \* </pattern> to capture and respond to unrecognized inputs. This ensures the chatbot can redirect users back to the intended flow or provide clarifications.

• Example:

<pattern> \* </pattern>

<template>I don’t understand "<star />". Please press a button or type a valid answer.</template>

Examples of Chatbot Functionality

Case 1:

• Scenario: User has a Computer Science degree and is proficient in AI.

• Interaction Flow:

• User: “Begin”

• Chatbot: “Hello. Would you like a suggestion for a job based on your skills?”

• User: “Yes”

• Chatbot: “What is your degree in?”

• User: “Computer Science”

• Chatbot: “What interests you or what are you proficient in?” (Carousel with options like AI, Cloud, Programming, etc.)

• User: “AI”

• Chatbot: “You should look into being a Large Language Model Engineer.”

Case 2:

• Scenario: User selects “Other” as their degree and decides to view suggestions.

• Interaction Flow:

• User: “Begin”

• Chatbot: “Hello. Would you like a suggestion for a job based on your skills?”

• User: “Yes”

• Chatbot: “What is your degree in?”

• User: “Other”

• Chatbot: “Sorry, we only have suggestions for Education and Computer Science majors. Would you like to see these suggestions?”

• User: “Yes”

• Chatbot: (Presents suggestions for Computer Science and Education fields).

These examples illustrate how AIML was used to create a responsive and interactive chatbot that provides career advice tailored to user inputs.

1. Create an installation manual for the chatbot that includes the web link to access the live chatbot in the Pandorabot platform.

* Open pandora bots -> Click on + sign next to “My Bots” -> Click add from Git Hub Repo -> Select from “Select Repo from URL” -> paste “<https://github.com/ImpossibleInc/C951Task1>” into the bar -> press import -> press import again

1. Assess the strengths and weaknesses of the chatbot development environment and explain how they supported or impeded the construction of the chatbot.

* Strengths
  + The AIML programming environment was user-friendly, making the chatbot development process straightforward. Despite being new to AIML, the resources provided by Pandorabot.com offered comprehensive guidance on the language, simplifying the chatbot’s creation.
* Weakness
  + While AIML was easy to use, it required accounting for all potential user inputs, which could be challenging. This was mitigated by incorporating buttons to streamline user interactions. However, without buttons, building the chatbot would have been a significantly more complex task. Additionally, the simplicity of AIML made implementing advanced or complex functionalities more difficult, as the language is not well-suited for intricate logic or dynamic behaviors.

1. Explain how the chatbot will be monitored and maintained to improve the final user experience.

* The career advisory chatbot is not without its limitations, leaving room for future enhancements. Future versions could incorporate links in user results, providing quick access to job descriptions and other relevant information. The program could also be expanded with additional job options and questions to improve its scope and utility. The categories are appropriately named, and the code is structured in clearly defined phases, utilizing the “topic” variable for organization, making it easy to follow. Regular maintenance and updates should be conducted every few months or whenever new features are added, whichever occurs first, to ensure the application remains effective and up-to-date.

1. Provide a Panopto video recording that includes a verbal summary of the capabilities of your chatbot and an example of human interaction with the chatbot in which it provides meaningful career advice.

* <https://wgu.hosted.panopto.com/Panopto/Pages/Viewer.aspx?id=623a3297-1c37-4074-ba8f-b25d006b63c2>

1. Acknowledge sources, using in-text citations and references, for content that is quoted, paraphrased, or summarized.

* All sources used for pictures only

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* Links to images themselves
  + <https://easy-peasy.ai/cdn-cgi/image/quality=80,format=auto,width=700/https://fdczvxmwwjwpwbeeqcth.supabase.co/storage/v1/object/public/images/0841377a-8060-4715-9bdb-4e44159851d3/dfbdbc8c-05e6-4b7c-bb0d-34fa7ff6be89.png>
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  + <https://ichef.bbci.co.uk/ace/standard/1024/cpsprodpb/14202/production/_108243428_gettyimages-871148930.jpg>

1. Demonstrate professional communication in the content and presentation of your submission.

* Hopefully self-evident