**C951 (Artificial Intelligence) – Task 1**

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**A: Explanation of Chatbot Functionalities**

The chatbot, *Career Advisor Bot*, efficiently guides computer science students in identifying suitable job roles by offering two main options: *Career Advice (Quiz)* and *Career List*. The quiz consists of six questions that rate students’ preferences for specific roles. Upon completion, the chatbot presents the ideal job role based on their responses. Additionally, the chatbot provides detailed resources for each job role and allows students to retake the quiz as many times as they like, ensuring comprehensive and personalized career guidance. Students may also review career roles without taking the quiz if desired.

**B: Computing Job Types**

The chatbot recommends the following five computing job types:

1. **Software** **Developer**: Focuses on coding, designing, and testing software applications.
2. **Data** **Analyst**: Specializes in interpreting data, analyzing results, and creating reports.
3. **Cybersecurity** **Analyst**: Responsible for protecting systems and networks from cyber threats.
4. **Systems** **Administrator**: Manages and maintains IT infrastructure, including servers and networks.
5. **Machine** **Learning** **Engineer**: Develops and implements machine learning models and algorithms.

These roles cover a diverse range of specialties within the computing field, catering to various student preferences and strengths.

**C: Chatbot Code Files**

Files are included in the submission, outside of this document.

**D: Chatbot Training Cases**

**Selection of Training Cases:**

The training cases were selected to cover a range of common scenarios that computer science students might encounter when seeking career advice. By focusing on typical student profiles, experience, and strengths, the options were selected to ensure the chatbot could provide accurate and helpful recommendations.

**Case 1: A Student with Strong Programming Skills**

* **Scenario:** A student excels in programming and enjoys problem solving for specific use-cases but is less interested in system design, maintenance, security, or analysis.
* **Reason for Selection:** This case represents students who are inclined towards software development and need guidance on pursuing roles that match their technical skills.

**Case 2: A Student Interested in Cybersecurity**

* **Scenario:** A student is passionate about how systems work and what makes them vulnerable. They’re interested in looking for vulnerabilities or even breaking systems.
* **Reason for Selection:** This case represents students who are specifically interested in cybersecurity and need tailored advice to align with their interests and strengths.

To represent each case, the chatbot poses a question with an ideal answer for each case (see *figure 1*). This allows the system to be flexible and account for each students’ preferences. After a choice is selected, the response calls on an additional function to tally the choice into a consolidated score (see *figure 2*), which directly affects the results of the career recommendation.



*(figure 1)*



*(figure 2)*

**Functionality Improvements:**

By defining specific patterns and templates in AIML, the chatbot can recognize and respond appropriately to students who express strong interest in software development, cybersecurity, or any of the 5 career choices. The chatbot can identify their preferences through targeted questions and appropriately increment the associated career score. This improvement allows the chatbot to recommend each role effectively.

**E: Installation Manual**

To access and start the *Career Advisor Bot* on the Pandorabot platform, please follow these step-by-step instructions:

1. **Log into Pandorabots:**
   1. Open your web browser and navigate to <https://pandorabots.com>.
   2. Log in using your Pandorabots account credentials. If you don’t have an account, you can sign up for a free account.
2. **Access the Bot Directory:**
   1. After logging in, go to the [Pandorabots Bot Directory.](https://home.pandorabots.com/dash/bot-directory)
3. **Search for the Bot:**
   1. In the search bar at the top of the page, type: *Anthony Hart – C951 Bot*
4. **Select the Bot:**
   1. From the search results, click on *Anthony Hart – C951 Bot* to activate the chatbot. You will see an orange icon in the bottom-right corner of the screen appear.
5. **Run the Chatbot:**
   1. Select the chatbot icon in the bottom-right-hand corner of the screen to acviate the bot.
   2. In the chatbot message window, type “hi” or any opening line to start the conversation.
6. **Begin Interaction:**
   1. Follow the chatbot’s prompts to navigate through the main options: “Career Advice (Quiz)” and “Career List.”
   2. If you choose “Career Advice (Quiz),” answer the six questions provided to receive your career recommendation.
   3. Explore additional resources for each job role as provided by the chatbot.

By following these steps, you will be able to start and interact with the chatbot on the Pandorabot platform.

**F: Chatbot Environment**

The Pandorabots development environment has some notable strengths and weaknesses that impacted the development and user experience of the chatbot.

On the plus side, the platform’s user-friendly interface made it easy to set up and manage the chatbot. This simplicity allowed for quick iterations and adjustments, speeding up development. Additionally, the support for AIML provided the flexibility needed to implement simple logic for the quiz and career recommendations.

However, there are some downsides. The platform lacks advanced AI features, like natural language understanding, and complex logic gates, such as AND, OR, XOR, and more, which limited the chatbot’s ability to handle varied user inputs. This required more extensive scripting to cover different scenarios, making development more time-consuming. Additionally, the constraints on customization, especially regarding third-party integrations and UI enhancements, restricted our ability to add more sophisticated features and improve the user experience.

While Pandorabots may have been a substantial chatting experience for its time, it has fallen behind more recent developments in AI, such as ChatGPT and Gemini. If I were to develop an AI solution today, I would likely approach the project using a more sophisticated programming language, such as Python or JavaScript, and utilize the API services from OpenAI or Google to implement a more sophisticated chatbot.

**G: Monitoring and Maintaining**

To keep the chatbot effective, there will be regular review of the interaction logs and user feedback to identify issues and improve responses. This will inform updates to the AIML scripts and content to stay current with job market trends and optimize performance for quick, accurate responses. Personalization will enhance relevance for each student, and expanding resources and proactive features like career fair reminders will further improve the user experience. Regular monitoring and updates will ensure the chatbot continues to provide valuable guidance.

**H: Panopto Recording**

Files are included in the submission, outside of this document.

**I: Sources**

**References**

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