CAPSTONE PROJECT

PROJECT TITLE

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OUTLINE

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PROBLEM STATEMENT

- *"Design and Develop a Multilingual Chatbot for Code Generation"*

- In this project, we aim to build an intelligent chatbot capable of processing user prompts and generating specific code snippets in various programming languages. The chatbot will take input from users in natural language and then translate their requests into code written in languages such as C, Python, or Java.

PROPOSED SOLUTION

Chatbot was created by using Watson Assistance along with the Following components.

The chatbot should have the following components:

- **User Input Handler**: This component receives user prompts and language preferences. It interacts with the user to understand their requirements.
- **Natural Language Understanding (NLU):** Train the chatbot to extract relevant information from user input. Use intents and entities to identify programming tasks and language preferences.
- **Code Generator:** This is the heart of the chatbot. It takes the processed user input and generates code snippets in the chosen programming language.
- **Language Selector:** Allow users to specify the target programming language (e.g., C, Python, Java).
- **Response Composer:** Combine the generated code with a friendly message to present to the user.

SYSTEM APPROACH

- **Requirements Gathering and System Approach:**
  1. Understand the project scope and objectives. Clarify what the chatbot should achieve.
  2. Gather detailed requirements:
     1. User input format (natural language prompts).
     2. Supported programming languages.
     3. Expected output (code snippets).

ALGORITHM & DEPLOYMENT

1. **Language Selection:**
    A. Implement a language selection mechanism:
        A. Ask the user which programming language they want the code in.
        B. Store the selected language for later use.
2. **Code Generation Logic:**
    A. Create a mapping between tasks and code snippets for each supported language:
        A. Maintain a database or lookup table with predefined templates.
        B. For example:
            A. Task: “Sort an array in ascending order”
                A. Python: sorted_array = sorted(my_array)
                B. Java: Arrays.sort(myArray);
                C. C: Implement a sorting algorithm (e.g., bubble sort).
        C. Use conditionals to select the appropriate snippet based on the user’s task and chosen language

RESULT

1. **Project Overview:**
    A. “Our project aims to create a versatile chatbot capable of understanding natural language prompts and generating code snippets in multiple programming languages.”
    B. “The chatbot bridges the gap between human language and code, making it easier for users to express their programming needs.”
2. **Key Features:**
    A. “The chatbot supports various programming languages, including Python, Java, and C.”
    B. “Users can input tasks in plain language, such as ‘Sort an array in ascending order’ or ‘Calculate the factorial of a number.’”
    C. “Upon language selection, the chatbot dynamically generates accurate code snippets.”

➢ **Project Live Review:**

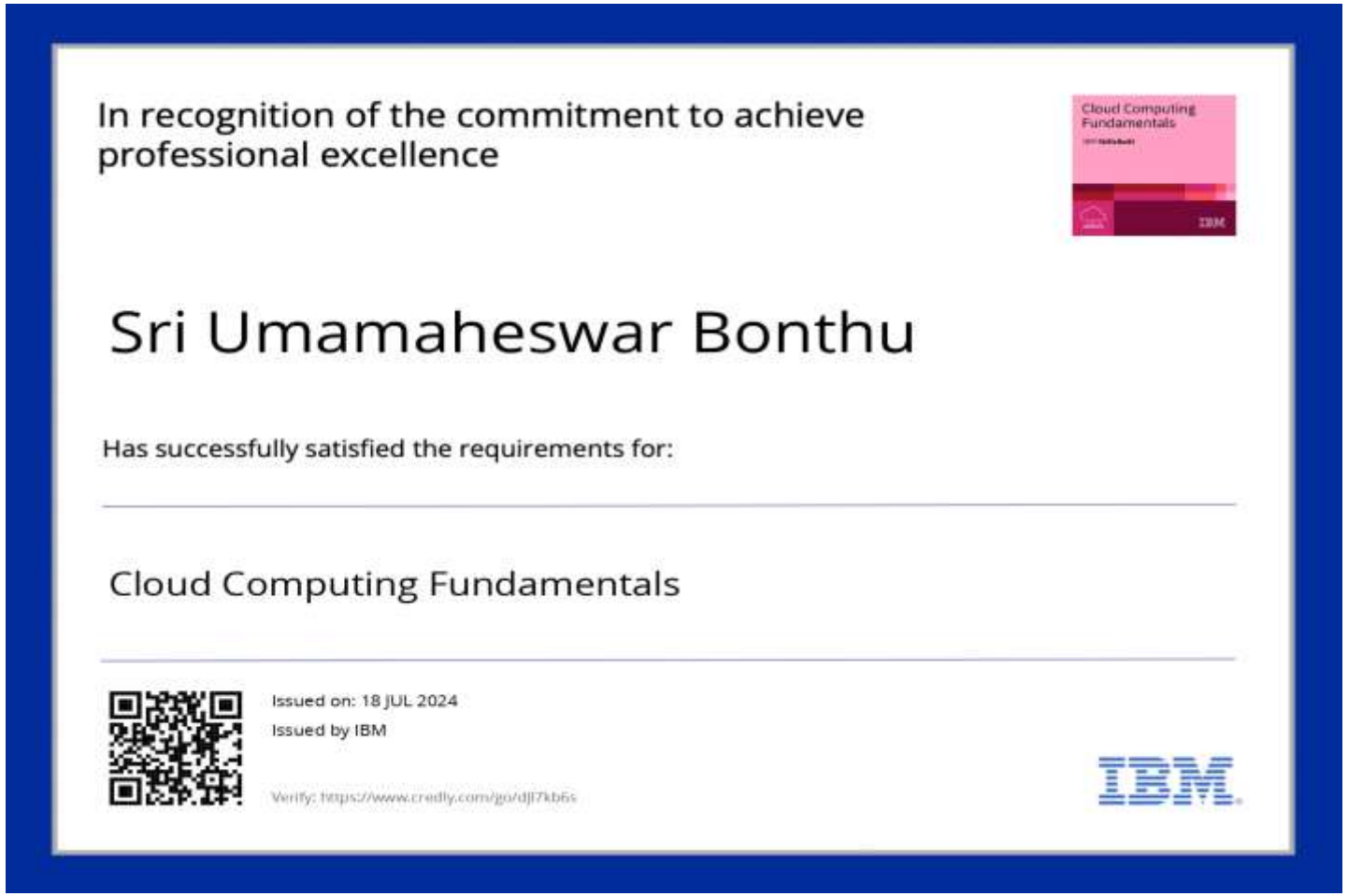
✓ CLICK HERE

CONCLUSION

- In summary, our multilingual code generation chatbot represents a leap forward in developer productivity. It bridges the gap between human language and code, making programming accessible to a wider audience. As we continue to refine and enhance its capabilities, we envision a future where chatbots seamlessly assist developers across diverse domains.

CERTIFICATE1

CETIFICATE 2



CHATBOT LINK:

https://web-chat.global.assistant.watson.appdomain.cloud/preview.html?backgroundImageURL=https%3A%2F%2Fau-syd.assistant.watson.cloud.ibm.com%2Fpublic%2Fimages%2Fupx-787c4104-4376-4f0c-9ea3-a673b97dcdf6%3A%3A7be0f6d2-2215-4c4f-8b06-3fef6a1acaa0&integrationID=921fcafa-c37a-4458-bb6d-c4f1c81c06dd&region=au-syd&serviceInstanceID=787c4104-4376-4f0c-9ea3-a673b97dcdf6

THANK YOU

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