جامعة مصر للمعلوماتية
EGYPT UNIVERSITY
OF INFORMATICS

Introduction to Programming CS-111

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Sudoku Game

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Introduction to the Project:

Our project introduces a **sports rule-based chatbot** an intelligent, interactive assistant designed to provide accurate and immediate responses to rule-related queries across various sports.

This chatbot leverages a structured knowledge base of sport-specific rules, enabling users to ask questions in natural language and receive clear, concise explanations in return.

Motivation:

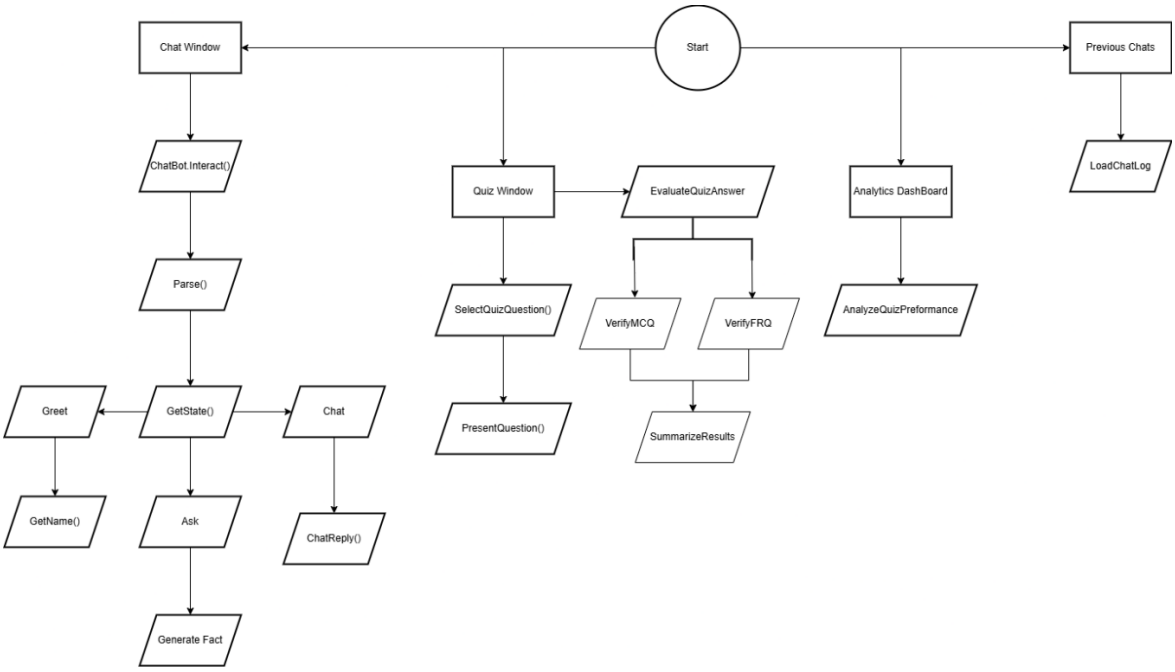
Sports was chosen because it offers a dynamic, engaging, and high-impact application area where real-time knowledge assistance can improve both understanding and enjoyment. Additionally, the chatbot serves as a scalable solution, capable of adapting to multiple sports, fostering broader educational use, and enhancing user engagement across age groups and expertise levels.

Design:

- Our project uses 2 languages Python & Scala. Python is used for the frontend and visualization. While Scala is used for the backend.
- To connect these 2 languages, we used a library called Py4J and to be able to operate correctly we access everything through an object Chatbot which holds all the functions of the chatbot.
- The library used for the front end is Streamlit which provides a localhost address to view the project and interact with it.
- In the GUI you will be able to chat with the bot, take a quick quiz, and view all of the analytics and logs.
- We save and load everything through JSON Files and then create our own data types based on the data.
- For analyzing the user's data we save and load through a CSV file.
- You will find below a Flowchart of most of the functions

Description:

- Once the website is running you will find 4 tabs on the left, each representing a different state for the bot.
- Click on one of the states then start interacting with bot.
- In the Chat Window you will be able to ask the Chatbot as many questions about 3 sports which are soccer, tennis, and basketball and chat with him basic conversations
- In the Quiz section with choose 1 of 3 topics soccer, tennis, & basketball. And you will get a random question whether MCQ or Free Response
- In the Analytics Dashboard, you will get results about the most asked categories and number of correct answers in the quiz section
- In Previous Chat tab you will get all the chats saved by each user.



Workload Distribution:

Patrick	Implemented Quiz core functionality
Youssef	Implemented Chatbot core functionality & Saving Files & Web Scrapping
Omar	Implemented Logs & Visualization of the Dashboard & Saving Files
Hamdy	Fully built GUI, Testing Bugs & Errors, Wrote all Quiz data

Challenges and Conclusions:

- Tried Multiple tools for the gui that facilitates interacting with the scala backend. Finally used Py4j and Streamlit
- Used manual web scrapping of the data to manage the range of data the chatbot is asked about through saving in JSON files and CSV
- Dealt with a bit of OOP to construct and operate more freely with data types