**SmartCafe Assistant:**

***Brief Explanation of the Program Structure:***

*This project is a simple chatbot assistant for a virtual café. The program is divided into three main parts:*

**Chatbot Agent**

Interacts with the user and passes the question to the appropriate handler

**Regex-based Intent Detection**

Uses regular expressions to understand what the user is asking for (called intent detection)

**Research Agent**

Loads data from a cafe\_data.json file and returns the correct response (ingredients, calories, opening hours, etc.)

***Role of Each Class and Method:***

***Chatbot Agent Class:***

init\_(): Initializes the chatbot

greet\_user(): Displays a welcome message

get\_user\_input(): Gets the user’s message

handle\_input(): Decides whether to exit or forward the message

run(): Runs the chatbot in a loop

**detect\_intent(user\_input) function*:***

*This function uses regular expressions (regex) to detect what the user wants***It identifies:**

**"ingredients" → e.g.: “What’s in a Mocha?”  
"nutrition" → e.g.: “How many calories in Hot Chocolate?”  
"hours" → e.g.: “When are you open on Friday?”  
"drinks" → e.g.: “What drinks do you have?”  
"unknown" → Any other question**

***Research Agent class:***

Reads data from cafe\_data.json and provides answers based on the intent

get\_ingredients(item): Returns ingredients of a menu item

get\_calories(item): Returns calorie info

get\_sugar\_content(item) (optional): Sugar info

get\_price(item) (optional): Price in USD

get\_opening\_hours(day): Café opening hours for a given day

get\_available\_drinks(): Shows all available drinks

***How Regex is Used to Detect Intents:***

*The program uses the re.search() function to find patterns in the user’s question*

**Example:**

**re.search(r"what(?:'s| is) in (.+)\??", user\_input)**

**This matches both:**

**“What’s in Mocha?”**

**“What is in Mocha?”**

**Each intent has its own regex pattern to recognize the type of question**

***Files Used:***

ChatBot.py → Handles chatbot flow

Regex.py → Contains the intent detection code

ResearchAgent.py → Provides answers using JSON data

cafe\_data.json → Contains menu, nutrition, drinks, and hours

**How to Run:**

Make sure cafe\_data.json is in the same folder Then run:

python ChatBot.py

**Screenshots**

Chatbot agent

**A screenshot of a computer program

AI-generated content may be incorrect.**A screenshot of a computer

AI-generated content may be incorrect.

Regex

A screenshot of a computer program

AI-generated content may be incorrect.

A screenshot of a computer

AI-generated content may be incorrect.

Research agent:

A computer screen shot of a program

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