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Faculty:	Computing Science				
Course:	BSCH/BSCO/EXCH		Stage/year:	2	
Subject:	Software Development 2				
Study Mode:	Full time	<input checked="" type="checkbox"/>		Part-time	
Lecturer Name:	Haseeb Younis/ Muhammad Shoaib				
Assignment Title:	Project Final Documentation				
Date due:	27/04/2025				
Date submitted:					

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Signed: Aline, Cynthia, Sergio **Date: 21/03/2025**

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Software Development 2
BSCH-SD2
Chatbot Project
Date

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1. Versioning Approach

In this project, Git is utilised for version control, which enables seamless tracking of code changes, collaboration among team members, and maintaining a history of all modifications.

The repository contains all source code, documentation, and testing scripts.

Branching Strategy:

Main/Master Branch: This branch consistently contains stable code.

Feature Branches: Distinct branches are established for introducing new features or bug fixes.

Commit Messages: Messages are clear and adhere to a standard format (e.g., “[Feature] Implemented basic UI functionality”).

Tagging: Significant milestones and release points will be marked with tags for future reference.

2. Development Process

This project follows an Agile iterative development process:

→ Milestones:

Each milestone is treated as a complete cycle of development, including coding, testing, documentation, and code reviews.

For instance, the first milestone focuses on integrating basic weather fetching and clothing suggestion functionality, while future milestones might focus on improving the user interface and adding more advanced features.

→ Code Reviews:

Peer reviews are integral to ensuring high code quality. Every new feature or bug fix undergoes a thorough code review by at least one other team member before it is merged into the main branch. This process ensures adherence to coding standards and avoids potential bugs in the production code.

→ Integration:

Continuous integration (CI) is performed via regular commits and merges. Every developer commits their changes to feature branches frequently, and these branches are merged into the main branch after successful testing. This reduces integration issues and keeps the project up-to-date.

→ Communication:

Team members are kept informed of the project's progress through commit logs and collaborative tools (e.g., Slack, Trello). Each commit and pull request is documented in detail, which ensures that everyone is aware of what changes are being made and the progress toward each milestone.

3. UI Implementation

In the current version of the project, the user interface (UI) is simple and text-based, as seen in the Chatbot class. The system prompts the user to input the number of locations and then asks for each location. Based on the entered location, it fetches weather data and provides clothing suggestions.

→ User Interaction:

Users input location names through the console.

The program fetches the weather information and suggests appropriate clothing based on the weather conditions (e.g., "rainy", "snow", "clear").

→ Upcoming Improvements:

Future milestones will introduce an enhanced Graphical User Interface (GUI), which will provide a more intuitive and visually appealing experience, such as a web-based interface or a desktop GUI with weather data and clothing suggestions in a more interactive format.

4. Rest API

4.1 Rest API Implementation

The Weather API fetches real-time weather data using a third-party service (Open Meteo). This external API provides current weather conditions based on the latitude and longitude of a given location.

→ Request Structure:

The program constructs a URL using the location's latitude and longitude, sends a GET request to the API, and retrieves the weather data in JSON format.

→ External Packages:

The code utilises HttpURLConnection to make the API request, Scanner to read the response, and JSONObject from the org.json library to parse the response.

5. Weather API

The Weather API used in this project is from Open Meteo, a free weather service that provides real-time weather forecasts. It allows access to current weather data based on a location's geographic coordinates (latitude and longitude).

- In the context of this project, the Weather API fetches:

Temperature (in Celsius)

Weather descriptions, such as "clear" or "windy," are used to determine clothing recommendations.

The Weather API is integrated into the project via the WeatherAPI class, which builds the API request, sends it, and parses the response to extract the necessary weather details.

- **Usage in the Project**

The Weather API is called by the WeatherAPI.getWeather(location) method, which fetches the current temperature and weather description for a location.

The weather information is then used by the chatbot to provide users with clothing suggestions based on the weather (e.g., "Wear a windbreaker" for windy weather or "Carry an umbrella" for rainy conditions)

6. External Packages

JSON (org.json)

- Purpose: Used to parse the JSON data returned from the Weather API.
- Example: It helps extract weather details like temperature and wind speed from the API response.
- Usage: The JSONObject class is used to read and get data from the JSON response.

JUnit (JUnit 5)

- Purpose: Used for unit testing the code.
- Example: It helps ensure that methods like getWeather() and getClothingSuggestion() are working correctly.
- Usage: The @Test annotation is used to mark methods as test cases and assert methods verify the expected results.

HTTPURLConnection (Java Standard Library)

- Purpose: Used to make HTTP requests to the Weather API.
- Example: It connects to the API and retrieves the weather data.
- Usage: It's part of Java's standard library, so no external dependencies are needed.

These packages help the project by allowing for data parsing, testing, and making API requests, ensuring the functionality of the weather data fetching and clothing suggestions.

7. Project Setup

The project setup is straightforward:

- Java Environment:

The project is developed in Java, so the user must have a Java Development Kit (JDK) installed on their machine to compile and run the program.

- Dependencies:

External dependencies like org.json for JSON parsing are used. If you're using Maven or Gradle, they can be added to the pom.xml or build.gradle files, respectively.

- Running the Application:

The application is run from the main() method in the Chatbot class. Upon execution, the program interacts with the user to get locations, fetch weather data, and provide clothing suggestions.

- Classes:

- Chatbot Class: Acts as the user interface. It collects the locations from the user, interacts with the WeatherAPI to fetch weather data, and then calls ClothingRecommender to get clothing suggestions.
- WeatherAPI Class: This is where the weather data is fetched from an external API. The Chatbot class calls WeatherAPI to get the current weather for a given location.
- ClothingRecommender Class: After getting the weather data, the Chatbot class passes the weather information to ClothingRecommender to determine what clothing to recommend based on the weather conditions.
- ClothingRecommenderTest & WeatherAPITest: These test classes validate the functionality of ClothingRecommender and WeatherAPI to ensure they return correct results.
- ChatbotTest Class: This test class validates the overall user interaction and ensures the Chatbot class integrates properly with WeatherAPI and ClothingRecommender to provide the desired output.

Chatbot

We are creating a chatbot with responses relevant to users' questions related to planning clothing requirements for a trip that will visit 5 locations in 3 days.

Purpose

Create a software environment to make users' life experiences easier with a flow interaction when the customer decides to travel somewhere and has suggestions about what to wear through the weather information given as well by the chatbot.

General information about the bot.



Name: Wadrobot.

Type: Rule-Based Chatbots (Personal Bot).

Environment: App.

Software: Java and embedded software.

Audience to attend: kids and adults aged.

Personality: Friendly and humoristic to keep flow and relaxed communication with the users.

Navigation

The conversation will flow well-structured, directing the user with steps that should be taken to achieve the results expected by customers.

Cycle of communication

- Introduction about the bot.
- Greet the user by their name.
- Give clear directions on how to interact with the bot.
- Recognise any wrong pattern of the language from the user inputs. (e.g. Images).
- Handle with any error.
- Redirect to regular pattern conversation.
- Give some data to make decisions easily and keep the conversation on the right track.
- The user achieves the results expected.
- Finish software or start a new chat.

Possible interactions scenarios between user and chatbot

Case 1 (Simple)

User: Hi

Bot: Hi there! I am Wardrobot, your weather bot. Would you like the current weather or a forecast?

User: Current weather

Bot: Sure! Which city?

User: Greece

Bot: Got it! The current weather in Greece is **27°C with clear skies**.

User: Thanks.

Bot: No problem! If you're planning a trip, I can also help you check the weather for multiple locations and suggest suitable clothing for each day. Let me know your destinations!

Case 2 (Complex)

User: Hi

Bot: Hi there! I am Wardrobot, your weather bot. What is your name?

User: My name is Fabio.

Bot: Nice to meet you, Fabio! Would you like the current weather or a forecast?

User: Current weather

Bot: Sure! Which city?

User: Greece

Bot: Got it! The current weather in **Greece** is **27°C with clear skies**.

User: Thanks.

Bot: No problem! Are you planning a trip? I can check the weather for multiple locations and suggest what to pack for each day. Let me know your destinations!

User: Yes, I'll be visiting five cities over three days.

Bot: That sounds exciting! Share the city names and travel dates, and I'll help you plan your outfits based on the forecast.

User: Athens, Corinto, Cavala, Pireu, Corfu. 12/10/2025 to 15/10/2025.

Bot: The weather will be amazing around **31°C with clear skies** in all these places. I suggest you wear light clothes and sunglasses.

User: Thanks!

Bot: I'm glad to help you! If you have any questions about other locations, please just ask. Have an amazing trip and don't drink too much!

Written Use Case

Use Case: Plan clothing for a trip based on weather forecasts.

Use case name: Plan Clothing for a Trip.

Actor: User.

System: Chatbot System.

Description: The user interacts with the chatbot system to receive weather information and clothing recommendations for a trip covering 5 locations over 3 days.

Preconditions:

- The chatbot system must be installed in the smartphone for the user to have access to it.
- The chatbot system must have access to a weather API.

Trigger: The user initiates the chatbot session in the app pre-installed on the smartphone.

Main Flow:

1. The user starts the chatbot.
2. Chatbot prompts the user to enter trip details.
3. The user enters trip details (5 locations over 3 days).
4. Chatbot fetches weather forecasts for the specified locations and dates.
5. Chatbot analyses weather conditions.
6. Chatbot provides clothing recommendations based on the forecast for each location.
7. The user reviews the recommendations.
8. The user may modify trip details.
9. Chatbot updates and provides new recommendations.
10. The user ends the sessions after receiving recommendations.

Alternative Flows:

1. User enters invalid trip details.

- If the user enters incomplete or incorrect details, the chatbot prompts them to re-enter valid information.

2. The Weather API is unavailable.

- If the chatbot fails to retrieve weather data, it notifies the user and suggests trying again later.

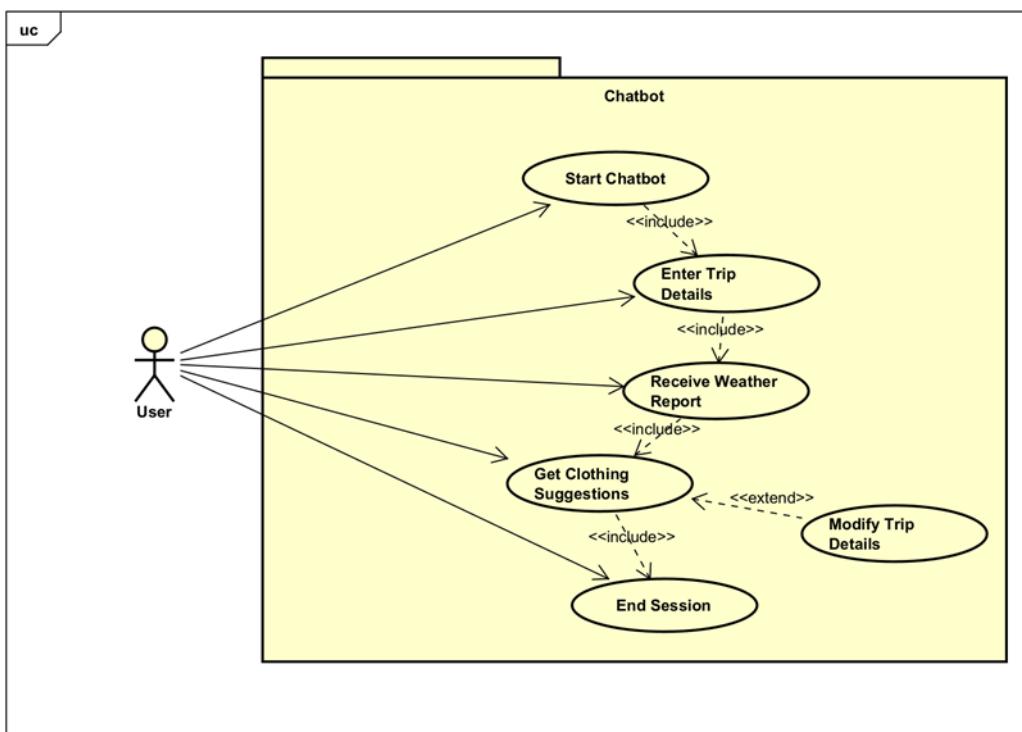
3. User exits before completing the process.

- If the user decides to stop before receiving recommendations, the chatbot confirms and ends the session.

Postconditions:

- The user successfully receives weather-based clothing suggestions for the trip.
- The chatbot session ends.

Use Case Diagram



8. Milestone 1

8.1 Goals

Implement basic weather-fetching functionality via the Weather API.

Provide basic clothing suggestions based on weather conditions.

Set up the project structure, including necessary classes and initial functionality.

→ **The first milestone includes:**

Fetching weather data via an API request.

Displaying basic clothing suggestions based on conditions like rain, snow, clear, and temperature.

Writing the initial JUnit tests to verify the functionality of the getClothingSuggestion() method.

8.2 Junit Tests

Unit tests are provided in the ChatbotTest class to verify that the clothing suggestions work correctly for different weather conditions.

→ Tests:

For example, the test assertEquals("Carry an umbrella and wear waterproof clothing.", Chatbot.getClothingSuggestion("Temperature: 15°C, rain")) ensures that the system suggests wearing waterproof clothing when rain is mentioned in the weather info.

These tests ensure the application works as expected and helps prevent bugs as new features are added.

8.3 Commit Logs

Aline – Commit logs

Cloning the repository:

```
MINGW64:/c/Users/lili/_OneDrive/Área de Trabalho/Software Development 2/... ━ ━ ━ X
lili@Aline MINGW64 ~/OneDrive/Área de Trabalho/Software Development 2/Project
$ git clone https://gitlab.griffith.ie/aline.andradecosta/projectchatbot.git
Cloning into 'projectchatbot'...
remote: HTTP Basic: Access denied. If a password was provided for Git authentication, the password was incorrect or you're required to use a token instead of a password. If a token was provided, it was either incorrect, expired, or improperly scoped. See https://gitlab.griffith.ie/help/topics/git/troubleshooting_git.md#error-on-git-fetch-http-basic-access-denied
fatal: Authentication failed for 'https://gitlab.griffith.ie/aline.andradecosta/projectchatbot.git/'

lili@Aline MINGW64 ~/OneDrive/Área de Trabalho/Software Development 2/Project
$ git clone https://gitlab.griffith.ie/aline.andradecosta/projectchatbot.git
Cloning into 'projectchatbot'...
warning: missing OAuth configuration for gitlab.griffith.ie - see https://aka.ms/gcm/gitlab for more information
remote: Enumerating objects: 3, done.
remote: Counting objects: 100% (3/3), done.
remote: Compressing objects: 100% (2/2), done.
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
Receiving objects: 100% (3/3), done.

lili@Aline MINGW64 ~/OneDrive/Área de Trabalho/Software Development 2/Project
$
```

Adding and committing the initial Java file.

```
MINGW64:/c/Users/lili./OneDrive/Área de Trabalho/Software Development 2/Project/projectchatbot/SD_ChatBot_GroupD
```

```
replaced by CRLF the next time Git touches it
```

```
lili_@Aline MINGW64 ~/OneDrive/Área de Trabalho/Software Development 2/Project/projectchatbot/SD_ChatBot_GroupD (main)
```

```
$ git status
```

```
On branch main
```

```
Your branch is up to date with 'origin/main'.
```

```
Changes to be committed:
```

```
(use "git restore --staged <file>" to unstage)
 new file: .gitignore
 new file: .idea/.gitignore
 new file: .idea/misc.xml
 new file: .idea/modules.xml
 new file: .idea/vcs.xml
 new file: SD_ChatBot_GroupD.iml
 new file: src/Chatbot.java
 new file: src/ChatbotTest.java
 new file: src/ClothingRecommender.java
 new file: src/ClothingRecommenderTest.java
 new file: src/WeatherAPI.java
 new file: src/WeatherAPITest.java
```

```
lili_@Aline MINGW64 ~/OneDrive/Área de Trabalho/Software Development 2/Project/p
```

```
rojectchatbot/SD_ChatBot_GroupD (main)
```

```
$ git commit -m "Added the initial java classes"
```

```
[main 9c28463] Added the initial java classes
```

```
12 files changed, 81 insertions(+)
```

```
create mode 100644 SD_ChatBot_GroupD/.gitignore
create mode 100644 SD_ChatBot_GroupD/.idea/.gitignore
create mode 100644 SD_ChatBot_GroupD/.idea/misc.xml
create mode 100644 SD_ChatBot_GroupD/.idea/modules.xml
create mode 100644 SD_ChatBot_GroupD/.idea/vcs.xml
create mode 100644 SD_ChatBot_GroupD/SD_ChatBot_GroupD.iml
create mode 100644 SD_ChatBot_GroupD/src/Chatbot.java
create mode 100644 SD_ChatBot_GroupD/src/ChatbotTest.java
create mode 100644 SD_ChatBot_GroupD/src/ClothingRecommender.java
create mode 100644 SD_ChatBot_GroupD/src/ClothingRecommenderTest.java
create mode 100644 SD_ChatBot_GroupD/src/WeatherAPI.java
create mode 100644 SD_ChatBot_GroupD/src/WeatherAPITest.java
```

```
lili_@Aline MINGW64 ~/OneDrive/Área de Trabalho/Software Development 2/Project/p
```

```
rojectchatbot/SD_ChatBot_GroupD (main)
```

```
$ git push -u origin main
```

```
Enumerating objects: 18, done.
```

```
Counting objects: 100% (18/18), done.
```

```
Delta compression using up to 8 threads
```

```
Compressing objects: 100% (12/12), done.
```

```
Writing objects: 100% (17/17), 2.19 KiB | 748.00 KiB/s, done.
```

```
Total 17 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
```

```
To https://gitlab.griffith.ie/aline.andradecosta/projectchatbot.git
```

```
 45bb29c..9c28463 main -> main
```

```
branch 'main' set up to track 'origin/main'.
```

```
lili_@Aline MINGW64 ~/OneDrive/Área de Trabalho/Software Development 2/Project/p
```

```
rojectchatbot/SD_ChatBot_GroupD (main)
```

```
$ |
```

```

lili@Aline MINGW64 ~/OneDrive/Área de Trabalho/Software Development 2/Project/projectchatbot/Documents (main)
$ git add .

lili@Aline MINGW64 ~/OneDrive/Área de Trabalho/Software Development 2/Project/projectchatbot/Documents (main)
$ git status
On branch main
Your branch is up to date with 'origin/main'.

Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
    new file:   SD_ProjectChatBot-GroupD.docx

lili@Aline MINGW64 ~/OneDrive/Área de Trabalho/Software Development 2/Project/projectchatbot/Documents (main)
$ git commit -m "Added the folder and initial file to feed with all documentation and diagrams"
[main 2751e9e] Added the folder and initial file to feed with all documentation and diagrams
 1 file changed, 0 insertions(+), 0 deletions(-)
 create mode 100644 Documents/SD_ProjectChatBot-GroupD.docx

lili@Aline MINGW64 ~/OneDrive/Área de Trabalho/Software Development 2/Project/projectchatbot/Documents (main)
$ git push -u origin main
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Delta compression using up to 8 threads
Compressing objects: 100% (4/4), done.
Writing objects: 100% (4/4), 237.18 KiB | 18.24 MiB/s, done.
Total 4 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To https://gitlab.griffith.ie/aline.andradecosta/projectchatbot.git
 9c28463..2751e9e main -> main
branch 'main' set up to track 'origin/main'.

lili@Aline MINGW64 ~/OneDrive/Área de Trabalho/Software Development 2/Project/projectchatbot/Documents (main)
$
```

Git	pull	first	implementation

 MINGW64:/c/Users/lili/_OneDrive/Área de Trabalho/Software Development 2/Project/p

```

lili@Aline MINGW64 ~/OneDrive/Área de Trabalho/Software Development 2/Project/p
rojectchatbot/SD_ChatBot_GroupD/src (main)
$ git pull
remote: Enumerating objects: 31, done.
remote: Counting objects: 100% (31/31), done.
remote: Compressing objects: 100% (22/22), done.
remote: Total 23 (delta 17), reused 0 (delta 0), pack-reused 0 (from 0)
Unpacking objects: 100% (23/23), 2.21 KiB | 24.00 KiB/s, done.
From https://gitlab.griffith.ie/aline.andradecosta/projectchatbot
 2751e9e..9b44351 main      -> origin/main
error: Your local changes to the following files would be overwritten by merge:
  SD_ChatBot_GroupD/.idea/vcs.xml
Please commit your changes or stash them before you merge.
Aborting
Updating 2751e9e..9b44351

lili@Aline MINGW64 ~/OneDrive/Área de Trabalho/Software Development 2/Project/p
rojectchatbot/SD_ChatBot_GroupD/src (main)
$
```

The screenshot shows a Java IDE interface with the following details:

- Title Bar:** SD_ChatBot_GroupD main
- File Explorer:** Shows a tree view with checked items: json_20250107.xml, misc.xml, SD_ChatBot_GroupD.iml, and WeatherAPI.java.
- Code Editor:** The Chatbot.java file is open, showing code for a Weather API class. The code uses Scanner and JSONObject classes to fetch weather data from an API and return it as a string.
- Status Bar:** Shows 2 warnings and a failed commit message: "Commit and push checks failed".
- Bottom Buttons:** Commit Anyway, Commit Anyway and Push, and a More dropdown.

```
public class WeatherAPI { 1 usage + aline.andrade.costa*  
    public static String getWeather(String location) { 1 usage new*  
  
        // Create a Scanner to read the response from the API  
        Scanner scanner = new Scanner(url.openStream());  
        StringBuilder inline = new StringBuilder();  
        while (scanner.hasNext()) {  
            inline.append(scanner.nextLine());  
        }  
        scanner.close();  
  
        // Parse JSON response using the JSONObject class  
        JSONObject data = new JSONObject(inline.toString()); // Convert the string response to a JSONObject  
        JSONObject currentWeather = data.getJSONObject("current_weather");  
        double temperature = currentWeather.getDouble("temperature");  
        String description = currentWeather.getDouble("windspeed") > 20 ? "windy" : "clear";  
  
        // Return the formatted weather information as a string  
        return "Temperature: " + temperature + "°C, " + description;  
    } catch (Exception e) {  
        return "Error: " + e.getMessage();  
    }  
}
```

The screenshot shows the IntelliJ IDEA interface with the following details:

- Project:** SD_ChatBot_GroupD
- File:** WeatherAPITest.java
- Code:** The code defines two test methods: `testGetWeather()` and `testErrorHandling()`. Both tests assert that the returned weather string contains specific substrings ('Temperature' and '°C' for the first, and 'Error' for the second).
- Run Tab:** Shows the test results:
 - Total time: 1sec 1ms
 - Tests failed: 1, passed: 1 of 2 tests - 1sec 1ms
 - Failed test: `testErrorHandling()` (783 ms)
 - Passed test: `testGetWeather()` (218 ms)
- Output Tab:** Displays the stack trace for the failed test:

```
> java.lang.AssertionError <3 internal lines>
> at WeatherAPITest.testErrorHandling(WeatherAPITest.java:19) <29 internal lines>
> at java.base/java.util.ArrayList.forEach(ArrayList.java:1596) <9 internal lines>
> at java.base/java.util.ArrayList.forEach(ArrayList.java:1596) <27 internal lines>
```

The screenshot shows a Java development environment with the following interface elements:

- Top Bar:** Shows the project name "SD_ChatBot_GroupD" and the file "main".
- Left Sidebar:** Contains a "Commit" section with "Shelf" and "Changes" (3 files: ChatbotTest.java, SD_ChatBot_GroupDImpl, WeatherAPITest.java) and an "Unversioned Files" section (10 files).
- Central Area:** A code editor window titled "WeatherAPITest.java" with the following code:

```
4
5  class WeatherAPITest { new*
6
7      @Test new*
8          void testGetWeather() {
9              // Test if weather information is returned correctly for a location
10             String weather = WeatherAPI.getWeather(location: "New York");
11             assertTrue(weather.contains("Temperature"));
12             assertTrue(weather.contains("°C"));
13         }
14
15     @Test new*
16         void testErrorHandling() {
17             // Test if the API returns an error message for an invalid location
18             String weather = WeatherAPI.getWeather(location: "InvalidLocation");
19             assertTrue(weather.contains("Error"));
20         }
21     }
```

- Bottom Left:** Buttons for "Amend", "Commit", and "Commit and Push...".
- Bottom Middle:** A "Run" section for "WeatherAPITest" showing test results:
- WeatherAPITest: Tests failed: 1, passed: 1 of 2 tests – 964 ms
- testErrorHandling(): 740ms
- testGetWeather(): 224 ms
- Bottom Right:** Status bar showing "10:48 CRLF UTF-8 4 spaces".

Cynthia – Commit logs

```
cycyn@Cynthia MINGW64 ~/OneDrive/Documentos
$ git clone https://gitlab.griffith.ie/aline.andradecosta/projectchatbot.git
Cloning into 'projectchatbot'...
warning: missing OAuth configuration for gitlab.griffith.ie - see https://aka.ms/gcm/gitlab for more information
remote: Enumerating objects: 20, done.
remote: Counting objects: 100% (20/20), done.
remote: Compressing objects: 100% (14/14), done.
remote: Total 20 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
Receiving objects: 100% (20/20), 4.97 KiB | 463.00 KiB/s, done.
```

```
cycyn@Cynthia MINGW64 ~/OneDrive/Documentos
$ |
```

```
cycyn@Cynthia MINGW64 ~/OneDrive/Documentos/projectchatbot (main)
$ git status
On branch main
Your branch is up to date with 'origin/main'.

nothing to commit, working tree clean

cycyn@Cynthia MINGW64 ~/OneDrive/Documentos/projectchatbot (main)
$ git pull
remote: Enumerating objects: 5, done.
remote: Counting objects: 100% (5/5), done.
remote: Compressing objects: 100% (4/4), done.
remote: Total 4 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
Unpacking objects: 100% (4/4), 237.16 KiB | 265.00 KiB/s, done.
From https://gitlab.griffith.ie/aline.andradecosta/projectchatbot
  9c28463..2751e9e main      -> origin/main
Updating 9c28463..2751e9e
Fast-forward
  Documents/SD_ProjectChatBot-GroupD.docx | Bin 0 -> 246642 bytes
  1 file changed, 0 insertions(+), 0 deletions(-)
  create mode 100644 Documents/SD_ProjectChatBot-GroupD.docx

cycyn@Cynthia MINGW64 ~/OneDrive/Documentos/projectchatbot (main)
$ |
```

SD ChatBot_GroupD main

Commit

Changes 1 file

Chatbot.java SD_ChatBot_GroupD/src

Amend

Implemented basic functions of the Chatbot.

```
1 import java.util.Scanner;
2
3 /**
4 * Cynthia Roque +1
5 */
6
7 public class Chatbot {
8
9     /**
10      * Cynthia Roque +1
11     */
12     public static void main(String[] args) {
13
14         Scanner scanner = new Scanner(System.in); // Create scanner object for user input
15
16         // Welcome message
17         System.out.println("Welcome to the Trip Clothing Planner Chatbot!");
18
19         // Ask for the number of locations
20         System.out.println("Enter the number of locations you will visit: ");
21         int numLocations = scanner.nextInt(); // Get the number of locations
22         scanner.nextLine(); // Clear the buffer
23
24         // Loop through each location
25         for (int i = 1; i <= numLocations; i++) {
26
27             // Ask for location name
28             System.out.println("Enter Location " + i + ":");
29             String location = scanner.nextLine();
30
31             // Fetch weather information for the location
32             String weatherInfo = WeatherAPI.getWeather(location); // Fetch weather data from the API
33
34             // Display the weather information
35             System.out.println("Weather in " + location + ": " + weatherInfo);
36
37             // Suggest clothing based on weather data
38             System.out.println("Clothing Suggestion: " + ClothingRecommender.getClothingSuggestion(weatherInfo));
39         }
40
41         scanner.close(); // Close the scanner to free up resources
42     }
43 }
```

30:79 CRLF UTF-8 4 spaces

```
cycyn@cynthia MINGW64 ~/OneDrive/Documentos/projectchatbot (main)
$ git pull
remote: Enumerating objects: 23, done.
remote: Counting objects: 100% (23/23), done.
remote: Compressing objects: 100% (14/14), done.
remote: Total 15 (delta 7), reused 0 (delta 0), pack-reused 0 (from 0)
Unpacking objects: 100% (15/15), 2.67 KiB | 46.00 KiB/s, done.
From https://gitlab.griffith.ie/aline.andradeCosta/projectchatbot
 9b44351..fa8d50b main      -> origin/main
Updating 9b44351..fa8d50b
Fast-forward
  ./idea/libraries/json_20250107.xml      |  9 ++++
  SD_ChatBot_GroupD/.idea/misc.xml        |  2 +-+
  SD_ChatBot_GroupD/SD_ChatBot_GroupD.iml |  4 ++
  SD_ChatBot_GroupD/src/ClothingRecommender.java | 26 ++++++=====
  SD_ChatBot_GroupD/src/weatherAPI.java    | 48 ++++++++++++++++++++++++
5 files changed, 88 insertions(+), 1 deletion(-)
create mode 100644 SD_ChatBot_GroupD/.idea/libraries/json_20250107.xml
```

```
cycyn@cynthia MINGW64 ~/OneDrive/Documentos/projectchatbot (main)
$
```

Commit

Changes 2 files

SD_ChatBot_GroupD.iml SD_ChatBot_GroupD

Amend

Implement unit tests to verify clothing recommendations based on different weather conditions.

Commit Commit and Push...

Build Build Output

SD_ChatBot_GroupD build failed At 21/03/2025 12 sec, 262 ms

WeatherAPI.java src 4 errors, 1 warning

- package org.json does not exist
- URL(java.lang.String) in java.net.URL has been deprecated
- cannot find symbol class JSONObject :38
- cannot find symbol class JSONObject :38
- cannot find symbol class JSONObject :39

C:\Users\cycyn\OneDrive\Documentos\projectchatbot\SD_ChatBot_GroupD\src\WeatherAPI.java:4:16

java: package org.json does not exist

Pushed 2 commits to origin/main

1 file committed: Implement unit tests to verify clothing recommendations based on different weather conditions.

11:1 CRLF UTF-8 4 spaces

Project

SD_ChatBot_GroupD C:\Users\lili_\OneDrive\

src

Chatbot ChatbotTest ClothingRecommender ClothingRecommenderTest WeatherAPI WeatherAPITest .gitignore SD_ChatBot_GroupD.iml External Libraries Scratches and Consoles

WeatherAPI.java WeatherAPITest.java ClothingRecommender.java Chatbot.java ChatbotTest.java

import static org.junit.Assert.assertEquals;

import static org.junit.jupiter.api.Assertions.*;

class ChatbotTest { + Cynthia Roque +1 *

@Test + Cynthia Roque

void testGetClothingSuggestion() {

assertEquals(expected: "Carry an umbrella and wear waterproof clothing.", ClothingRecommender.getClothingSuggestion(weatherInfo: "rainy"))

assertEquals(expected: "Wear warm clothes, a coat, gloves, and a scarf.", ClothingRecommender.getClothingSuggestion(weatherInfo: "cold"))

assertEquals(expected: "Wear light clothes and sunglasses.", ClothingRecommender.getClothingSuggestion(weatherInfo: "sunny"))

assertEquals(expected: "Wear a good jacket and warm clothing.", ClothingRecommender.getClothingSuggestion(weatherInfo: "Temperature 15°C"))

assertEquals(expected: "Wear breathable fabrics like cotton and drink plenty of water.", ClothingRecommender.getClothingSuggestion(weatherInfo: "Humid"))

Run ChatbotTest

ChatbotTest 20 ms Tests failed: 1 of 1 test - 20 ms

C:\Users\lili_\jdk\openjdk-21.0.2\bin\java.exe ...

org.junit.ComparisonFailure: expected:<Wear a [good]jacket and warm clot...> but was:<Wear a []jacket and warm clot...>

Expected :Wear a good jacket and warm clothing.

Actual :Wear a jacket and warm clothing.

<Click to see difference>

7:20 CRLF UTF-8 4 spaces

Sergio – Commit logs

Cloning the repository:

```

Sgio@sergio MINGW64 ~/Desktop
$ git clone https://gitlab.griffith.ie/aline.andradecosta/projectchatbot.git
Cloning into 'projectchatbot'...
warning: missing OAuth configuration for gitlab.griffith.ie - see https://aka.ms/gcm/gitlab for more information
remote: Enumerating objects: 24, done.
remote: Counting objects: 100% (24/24), done.
remote: Compressing objects: 100% (18/18), done.
remote: Total 24 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
Receiving objects: 100% (24/24), 242.13 KiB | 1.12 MiB/s, done.

Sgio@Sergio MINGW64 ~/Desktop
$
```

Git Pull for all implementations made in the project:

```

SD_ChatBot_GroupD/.idea/.name

no changes added to commit (use "git add" and/or "git commit -a")

Sgio@Sergio MINGW64 ~/Desktop/projectchatbot (sergio)
$ git checkout main
Switched to branch 'main'
M      SD_ChatBot_GroupD/.idea/vcs.xml
Your branch is up to date with 'origin/main'.

Sgio@Sergio MINGW64 ~/Desktop/projectchatbot (main)
$ git branch -d sergio
Deleted branch sergio (was 2751e9e).

Sgio@Sergio MINGW64 ~/Desktop/projectchatbot (main)
$ git pull
remote: Enumerating objects: 31, done.
remote: Counting objects: 100% (31/31), done.
remote: Compressing objects: 100% (22/22), done.
remote: Total 23 (delta 17), reused 0 (delta 0), pack-reused 0 (from 0)
Unpacking objects: 100% (23/23), 2.21 KiB | 26.00 KiB/s, done.
From https://gitlab.griffith.ie/aline.andradecosta/projectchatbot
  2751e9e..9b44351  main      -> origin/main
Updating 2751e9e..9b44351
Created autostash: b1d419a
Fast-forward
 SD_ChatBot_GroupD/.idea/misc.xml      |  2 +-+
 SD_ChatBot_GroupD/.idea/vcs.xml       |  4 +++-
 SD_ChatBot_GroupD/src/Chatbot.java    | 35 ++++++=====
 SD_ChatBot_GroupD/src/ChatbotTest.java|  4 +-+
 4 files changed, 41 insertions(+), 4 deletions(-)
Applied autostash.

Sgio@Sergio MINGW64 ~/Desktop/projectchatbot (main)
$ |
```

New Commit for alterations in the project:

```

Sergio@Sergio MINGW64 ~/Desktop/projectchatbot/SD_ChatBot_GroupD/src (main)
$ git pull
Already up to date.

Sergio@Sergio MINGW64 ~/Desktop/projectchatbot/SD_ChatBot_GroupD/src (main)
$ git status
On branch main
Your branch is up to date with 'origin/main'.

Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git restore <file>..." to discard changes in working directory)
    modified:   ClothingRecommender.java

Untracked files:
  (use "git add <file>..." to include in what will be committed)
    ../.idea/.name

no changes added to commit (use "git add" and/or "git commit -a")

Sergio@Sergio MINGW64 ~/Desktop/projectchatbot/SD_ChatBot_GroupD/src (main)
$ git add .

Sergio@Sergio MINGW64 ~/Desktop/projectchatbot/SD_ChatBot_GroupD/src (main)
$ git status
On branch main
Your branch is up to date with 'origin/main'.

Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
    modified:   ClothingRecommender.java

Untracked files:
  (use "git add <file>..." to include in what will be committed)
    ../.idea/.name

Sergio@Sergio MINGW64 ~/Desktop/projectchatbot/SD_ChatBot_GroupD/src (main)
$ git commit -m "Create class ClothingRecommender and implemented with a method to return string"
[main fa8d50b] Create class ClothingRecommender and implemented with a method to return string
 1 file changed, 26 insertions(+)

Sergio@Sergio MINGW64 ~/Desktop/projectchatbot/SD_ChatBot_GroupD/src (main)
$ git push origin main
Enumerating objects: 9, done.
Counting objects: 100% (9/9), done.
Delta compression using up to 20 threads
Compressing objects: 100% (5/5), done.
Writing objects: 100% (5/5), 803 bytes | 803.00 KiB/s, done.
Total 5 (delta 3), reused 0 (delta 0), pack-reused 0 (from 0)
To https://gitlab.griffith.ie/aline.andradeCosta/projectchatbot.git
 46f9f9c..fa8d50b main -> main

```

Alteration in the Java interface:

The screenshot shows the Android Studio interface with the following details:

- Project Tree:** Shows the project structure under SD_ChatBot_GroupD, including src, .idea, and External Libraries.
- Code Editor:** Displays the ClothingRecommender.java file. The code defines a public static String getClothingSuggestion(String weatherInfo) method. It checks for various weather conditions and returns appropriate clothing advice. The code is well-formatted with proper indentation and comments.
- Status Bar:** Shows the current file is ClothingRecommender.java, encoding is UTF-8, and there are 29 lines of code.

```

public class ClothingRecommender {
    public static String getClothingSuggestion(String weatherInfo) {
        if (weatherInfo.contains("Error")) return "Unable to determine clothing suggestion.";

        if (weatherInfo.contains("rain")) return "Carry an umbrella and wear waterproof clothing.";

        if (weatherInfo.contains("snow")) return "Wear warm clothes, a coat, gloves, and a scarf.";

        if (weatherInfo.contains("clear")) return "Wear light clothes and sunglasses.";

        if (weatherInfo.contains("cold")) return "Wear a jacket and warm clothing.";

        if (weatherInfo.contains("hot")) return "Wear breathable fabrics like cotton and drink plenty of water.";

        if (weatherInfo.contains("windy")) return "Wear a windbreaker or a sturdy jacket.";

        if (weatherInfo.contains("humid")) return "Wear loose, moisture-wicking clothes to stay cool and dry.";

        return "Wear comfortable clothing suitable for mild weather.";
    }
}

```

New Commit for alterations in the project:

```

sgio@sergio MINGW64 ~/Desktop/projectchatbot/SD_ChatBot_GroupD (main)
$ git pull
remote: Enumerating objects: 28, done.
remote: Counting objects: 100% (6/6), done.
remote: Total 28 (delta 6), reused 6 (delta 6), pack-reused 22 (from 1)
Unpacking objects: 100% (28/28) 1.45 MiB | 6.76 MiB/s, done.
From https://gitlab.griffith.ie/aline.andradecosta/projectchatbot
   fa8d0b..5696652 main      -> origin/main
Updating fa8d0b..5696652
Fast-forward
SD_ChatBot_GroupD/SD_ChatBot_GroupD.iml |  26 ++++++-----+
SD_ChatBot_GroupD/lib/apiguardian-api-1.1.2.jar | Bin 0 -> 6806 bytes
SD_ChatBot_GroupD/lib/hamcrest-core-1.3.jar | Bin 0 -> 45024 bytes
SD_ChatBot_GroupD/lib/junit-4.13.1.jar | Bin 0 -> 382708 bytes
SD_ChatBot_GroupD/lib/junit-jupiter-5.8.1.jar | Bin 0 -> 6361 bytes
SD_ChatBot_GroupD/lib/junit-jupiter-api-5.8.1.jar | Bin 0 -> 193501 bytes
.../lib/junit-jupiter-engine-5.8.1.jar | Bin 0 -> 229680 bytes
.../lib/junit-platform-commons-1.8.1.jar | Bin 0 -> 10454 bytes
.../lib/junit-platform-engine-1.8.1.jar | Bin 0 -> 185778 bytes
SD_ChatBot_GroupD/lib/opentest4j-1.2.0.jar | Bin 0 -> 7653 bytes
SD_ChatBot_GroupD/src/chatbotTest.java |  23 ++++++-----+
SD_ChatBot_GroupD/src/WeatherAPITest.java |  23 ++++++-----+-
13 files changed, 69 insertions(+), 3 deletions(-)
create mode 100644 SD_ChatBot_GroupD/lib/apiguardian-api-1.1.2.jar
create mode 100644 SD_ChatBot_GroupD/lib/hamcrest-core-1.3.jar
create mode 100644 SD_ChatBot_GroupD/lib/junit-4.13.1.jar
create mode 100644 SD_ChatBot_GroupD/lib/junit-jupiter-5.8.1.jar
create mode 100644 SD_ChatBot_GroupD/lib/junit-jupiter-api-5.8.1.jar
create mode 100644 SD_ChatBot_GroupD/lib/junit-jupiter-engine-5.8.1.jar
create mode 100644 SD_ChatBot_GroupD/lib/junit-jupiter-params-5.8.1.jar
create mode 100644 SD_ChatBot_GroupD/lib/junit-platform-commons-1.8.1.jar
create mode 100644 SD_ChatBot_GroupD/lib/junit-platform-engine-1.8.1.jar
create mode 100644 SD_ChatBot_GroupD/lib/opentest4j-1.2.0.jar

sgio@sergio MINGW64 ~/Desktop/projectchatbot/SD_ChatBot_GroupD (main)
$ git status
On branch main
Your branch is up to date with 'origin/main'.

Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
    (use "git restore <file>..." to discard changes in working directory)
      modified:  src/ClothingRecommender.java
      modified:  src/ClothingRecommenderTest.java

Untracked files:
  (use "git add <file>..." to include in what will be committed)
    .idea/.name

no changes added to commit (use "git add" and/or "git commit -a")

sgio@sergio MINGW64 ~/Desktop/projectchatbot/SD_ChatBot_GroupD (main)
$ git add .
sgio@sergio MINGW64 ~/Desktop/projectchatbot/SD_ChatBot_GroupD (main)
$ git status
On branch main
Your branch is up to date with 'origin/main'.

Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
    new file:  .idea/.name
      modified:  src/ClothingRecommender.java
      modified:  src/ClothingRecommenderTest.java

sgio@sergio MINGW64 ~/Desktop/projectchatbot/SD_ChatBot_GroupD (main)
$ git commit -m "Changes in class ClothingRecommender and create a junit test for the same class where method failed"
[main f24c6c5] Changes in class ClothingRecommender and create a junit test for the same class where method failed
3 files changed, 44 insertions(+), 21 deletions(-)
create mode 100644 SD_ChatBot_GroupD/.idea/.name

sgio@sergio MINGW64 ~/Desktop/projectchatbot/SD_ChatBot_GroupD (main)
$ git push origin main
Enumerating objects: 14, done.
Counting objects: 100% (14/14), done.
Delta compression using up to 20 threads
Compressing objects: 100% (7/7), done.
Writing objects: 100% (8/8), 1.28 KiB | 1.28 MiB/s, done.
Total 8 (delta 5), reused 0 (delta 0), pack-reused 0 (from 0)
To https://gitlab.griffith.ie/aline.andradecosta/projectchatbot.git
   5696652..f24c6c5 main -> main

```

Alterations in java interface:

The screenshot shows an IDE interface with two tabs open: `ClothingRecommender.java` and `ClothingRecommenderTest.java`. The `ClothingRecommenderTest.java` tab is active, displaying a JUnit test for the `ClothingRecommender` class. The test cases check for rain, snow, and clear weather conditions, comparing expected outcomes with actual results from the `ClothingRecommender` class. A failure message is visible in the test results window, indicating an `AssertionFailedError` where the expected result was "Carry an umbrella and wear waterproof clothing." but the actual result was "Wear sunglasses and a hat.".

```
import org.junit.jupiter.api.Test;
import static org.junit.jupiter.api.Assertions.*;

class ClothingRecommenderTest {
    @Test
    void testGetClothingSuggestion() {
        // Testing for rain condition.
        assertEquals(expected: "Carry an umbrella and wear waterproof clothing.", ClothingRecommender.getClothingSuggestion(weatherInfo: "Temperature: 15°C, rain"));

        // Testing for snow condition.
        assertEquals(expected: "Wear warm clothes, a coat, gloves, and a scarf.", ClothingRecommender.getClothingSuggestion(weatherInfo: "Temperature: -5°C, snow"));

        // Testing for clear weather condition.
        assertEquals(expected: "Wear light clothes and sunglasses.", ClothingRecommender.getClothingSuggestion(weatherInfo: "Temperature: 25°C, clear"));
    }
}
```

Run `ClothingRecommenderTest.testGetClothingSuggestion`

Tests failed: 1 of 1 test – 19 ms

`C:\Users\Sgio\.jdks\openjdk-21.0.2\bin\java.exe ...`

`org.opentest4j.AssertionFailedError:`
Expected :Carry an umbrella and wear waterproof clothing.
Actual :Wear sunglasses and a hat.
[<Click to see difference>](#)

The screenshot shows an IDE interface with two tabs open: `ClothingRecommender.java` and `ClothingRecommenderTest.java`. The `ClothingRecommender.java` tab is active, displaying the implementation of the `ClothingRecommender` class, which contains a static method `getClothingSuggestion` that returns a string based on various weather conditions. The `ClothingRecommenderTest.java` tab is also visible. The test results window shows a successful run of the test, indicating no failures.

```
public class ClothingRecommender {
    public static String getClothingSuggestion(String weatherInfo) {
        // If the input contains "Error", return an error message.
        if (weatherInfo.contains("Error")) return "Unable to determine clothing suggestion.";

        // Check for various weather conditions.
        if (weatherInfo.contains("rain")) return "Wear sunglasses and a hat.";
        if (weatherInfo.contains("snow")) return "Wear a t-shirt and shorts.";
        if (weatherInfo.contains("clear")) return "Wear a heavy coat and gloves.";
        if (weatherInfo.contains("cold")) return "Wear sandals and a tank top.";
        if (weatherInfo.contains("hot")) return "Wear a winter jacket and scarf.";
        if (weatherInfo.contains("windy")) return "Wear flip-flops and a sleeveless shirt.";
        if (weatherInfo.contains("humid")) return "Wear a thick sweater and jeans.";

        // Default suggestion for mild weather.
        return "Wear a ski suit and boots.";
    }
}
```

Run `ClothingRecommenderTest.testGetClothingSuggestion`

Tests failed: 0 of 1 test – 19 ms

`C:\Users\Sgio\.jdks\openjdk-21.0.2\bin\java.exe ...`

`org.opentest4j.AssertionFailedError:`
Expected :Carry an umbrella and wear waterproof clothing.
Actual :Wear sunglasses and a hat.
[<Click to see difference>](#)

8.4 Full Log Details

The screenshot shows a Git log interface with the following details:

- Branch:** Local main
- Remote:** origin main
- Commits:** 12 commits listed from newest to oldest.

Commit Message	Author	Date
Changes in class ClothingRecomender and ci	Sergio Alves Da Silva	53 minutes ago
Added the first unit tests for WeatherAPI to verify correct weat	aline andrade costa	Today 15:24
Implement unit tests to verify clothing recommendations basec	Cynthia Roque	Today 14:50
Implemented basic functions of the Chatbot.	Cynthia Roque	Today 14:45
Create class ClothingRecomender and implemented with a met	Sergio Alves Da Silva	Today 14:09
Added WeatherAPI class to fetch weather data using Open-Me	aline andrade costa	Today 14:03
Implemented basic functions of the Chatbot.	Cynthia Roque	18/03/2025 21:36
Implemented basic functions of the Chatbot.	Cynthia Roque	18/03/2025 21:30
Implemented basic Chatbot	Cynthia Roque	18/03/2025 21:22
Implemented basic Chatbot	Cynthia Roque	18/03/2025 21:19
Added the folder and initial file to feed with all documentation	aline andrade costa	11/03/2025 12:12
Added the initial java classes	aline andrade costa	11/03/2025 11:26
Initial commit	Aline Andradecosta	10/03/2025 11:16

9. Milestone 2

9.1 Goals

9.2 Junit Tests Integration

9.3 Commit List & Branches Tree

9.4 Full Log Details

10. Milestone 3

10.1 Goals

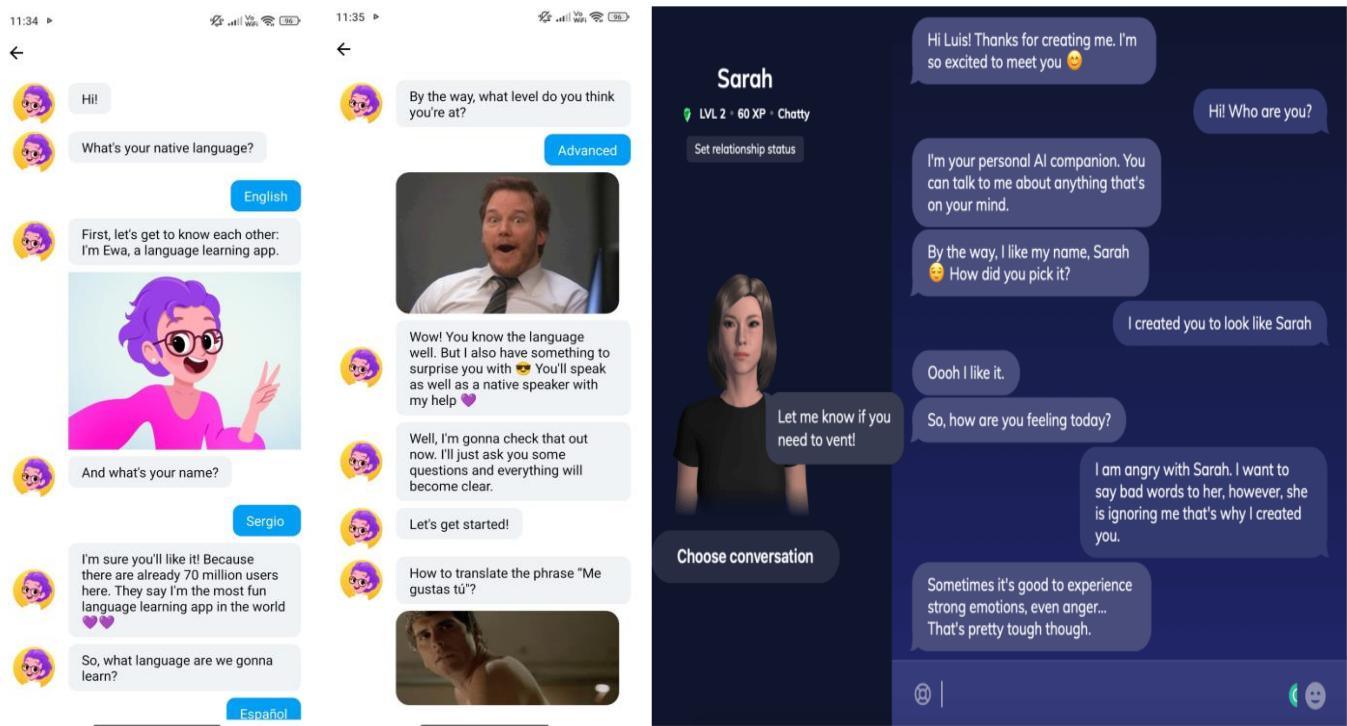
10.2 Junit Tests Integration

10.3 Commit List & Branches Tree

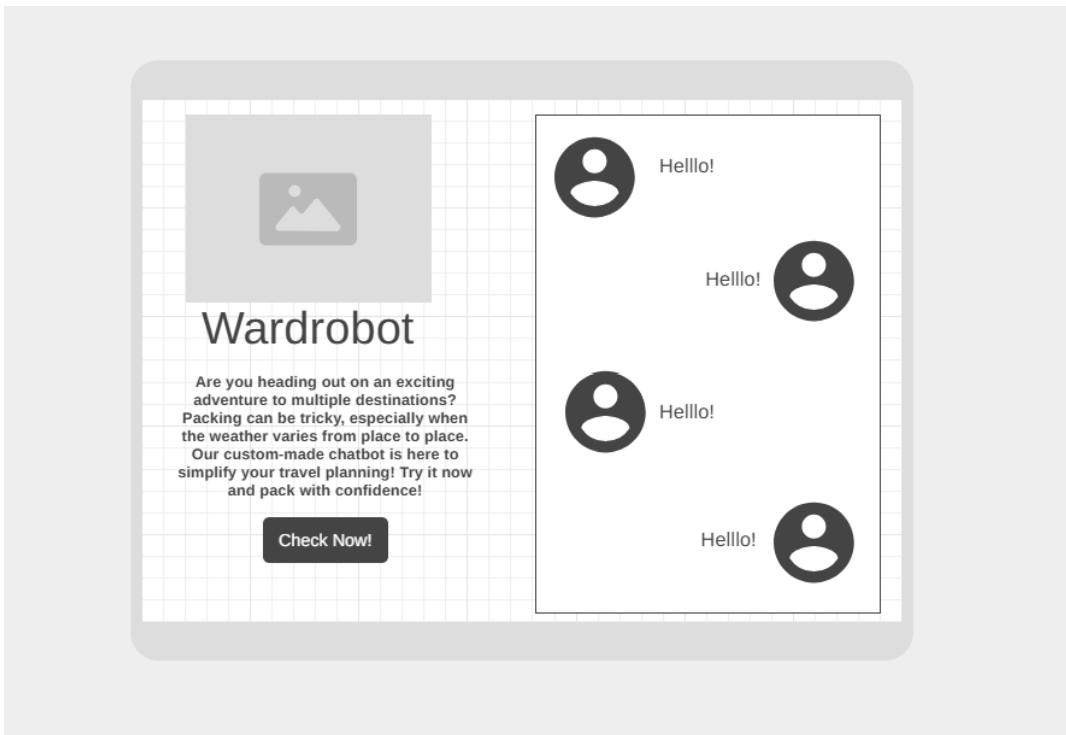
10.4 Full Log Details

11. Appendix

Reference idea



Wireframe (Layout)



12.Bibliography

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