CROSS-PLATFORM MOBILE APP DEVELOPMENT

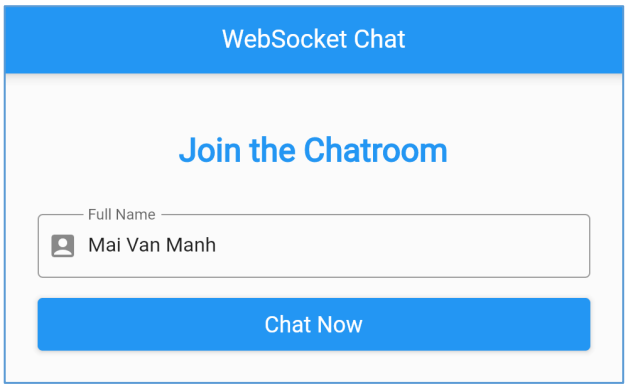
(503107)

LAB 10

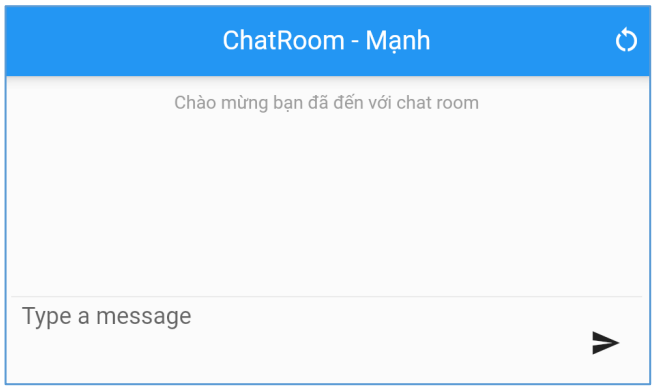
EXERCISE 1

Write a program that allows users to register information and chat realtime with other users in the same system. The program only requires users to enter a name to be able to start sending and receving messages in a chat room.

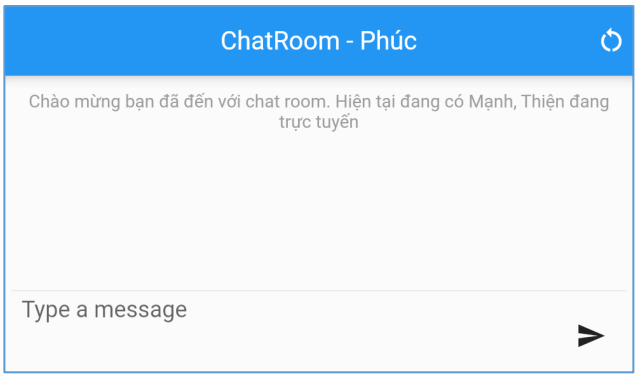
Your flutter application needs to connect to a web socket server, this part will be set up and provided by the instructor, your task is just to combines http client and web socket client to connect to the server.



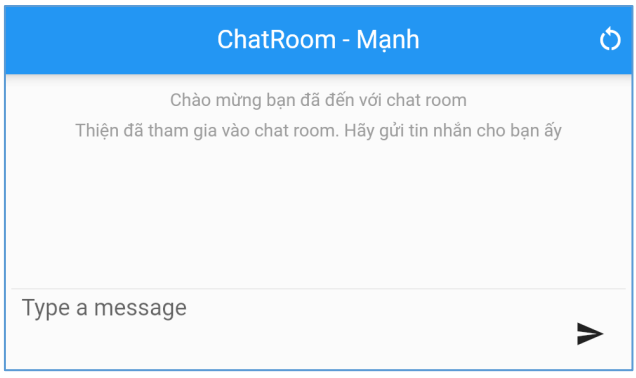
Users need to provide a Display Name before joining the chat room



Welcome screen for being the first participant



Welcome screen when you join the chat room after others



A notification when a new person has just joined the chat room.

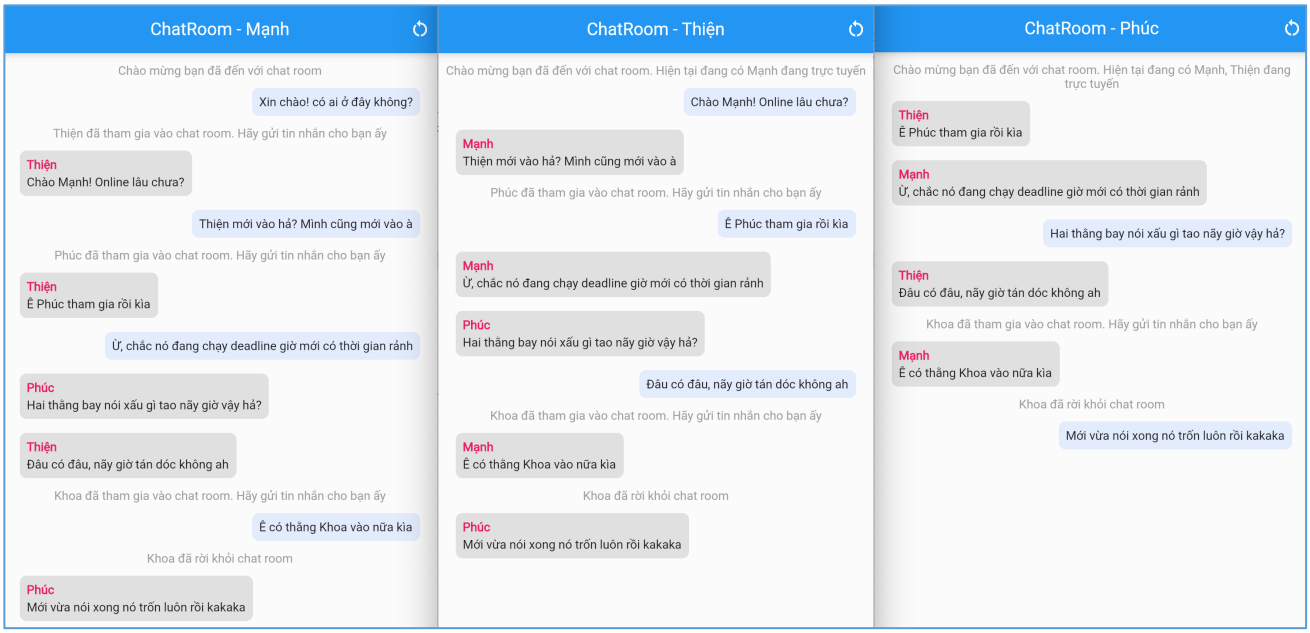
To connect to the web socket server you can use the web_socket_channel package. The content sent and received between the flutter application and the web socket server is in the form of a json document with properties like: type, message and from.

Some sample request messages sent from your application to the server:

- Register your displayname with the server: `{"type":"register","message":"Khoa"}`
- Send a message to the server: `{"type":"chat","message":"Xin chào mọi người",  "from":"Duy"}`

Some sample response messages sent from the server to your app:

- A status messge: `{"type":"info","message":"Loan vừa mới tham gia phòng chat"}`
- A chat message: `{"type":"chat","message":"Xin chào, mọi người khỏe không", "from":"Duy"}`



An example of a conversation between 3 members in a chat room. In addition to information about messages, the application also displays status messages such as notifications of new participants, people who have just exited the conversation.

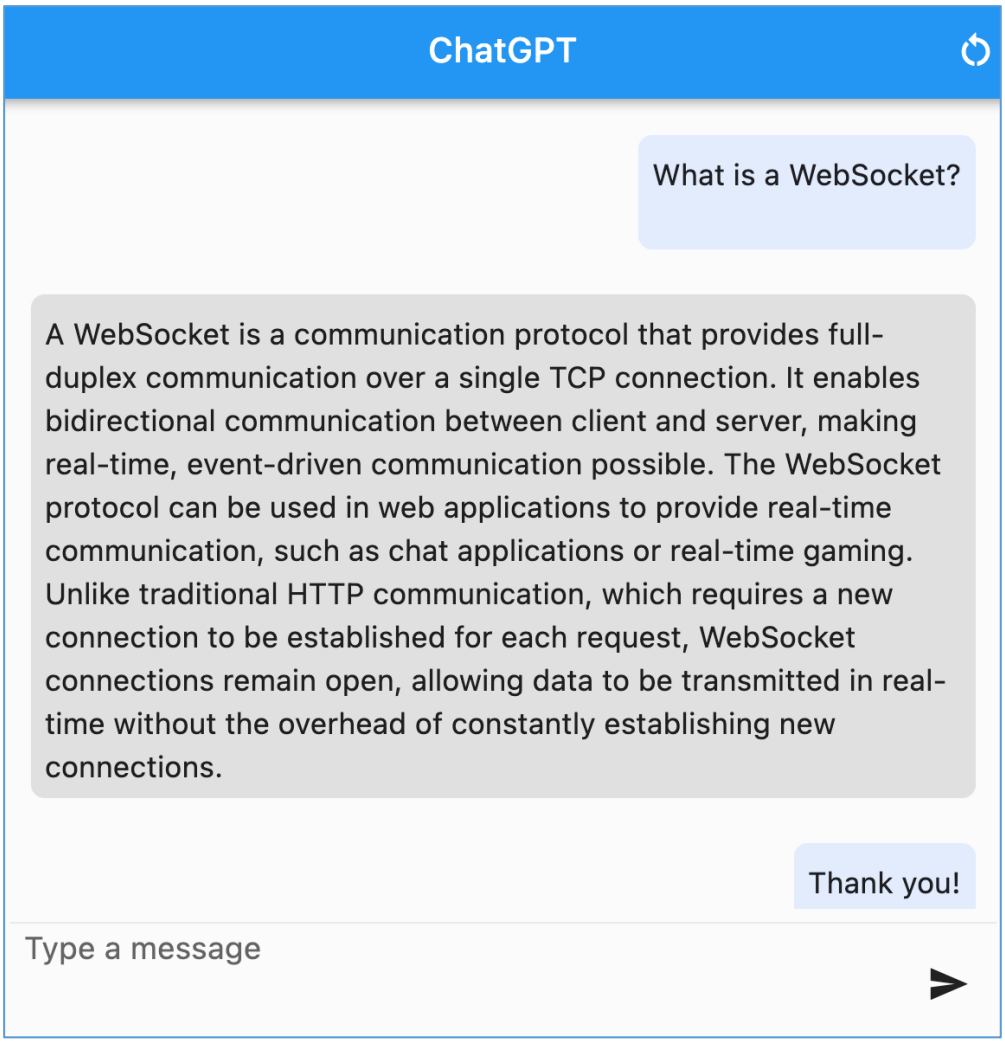
User experience requirements

- Automatically scroll the conversation UI to the bottom every time a new message is displayed.

- Let's change the interface to show a circle avatar to the chat participants. Add information about time to receive messages in the right corner, below each message.
- Apply local storage mechanisms to save the entire conversation so that when exiting the application and reconnecting, the content of the conversation is preserved.

EXERCISE 2

Reuse the Chat UI in the previous exercise to create a chatbox application that integrates with the OpenAI ChatGPT API. The app works exactly like ChatGPT web version, but integrated directly into your flutter app.



The general steps to make this application are as follows:

1. **Build a chat conversation UI** that includes a textfield and a button to enter content, a list displaying the content of the conversation (reusing the UI of the previous exercise).
2. **Register for a Free ChatGPT account** (if necessary, you need to use VPT services to be able to register)
3. **Generate API Key**: visit https://platform.openai.com/account/api-keys to generate an API key. This key is used to authenticate the account when you send a request to chatgpi's api (using **Bearer** token mechanism, similar to json web token).
4. Use the http package or similar packages to **send an http post request** to the chatgpt api endpoint with the necessary data (model name used, prompt text value sent to the model, api key) to receive the response, display feedback on chat conversation interface.

```
curl https://api.openai.com/v1/chat/completions \
  -H "Content-Type: application/json" \
  -H "Authorization: Bearer $OPENAI_API_KEY" \
  -d '{
    "model": "gpt-3.5-turbo",
    "messages": [{"role": "user", "content": "Hello!"}]
  }'
```

The example just asked chatgpt to answer a single question, so that chatgpt can understand the entire conversation, you need to send back chatgpt the content of the previous conversation according to the following form.

```
{
    "model": "gpt-3.5-turbo",
    "messages": [
        { "role": "user", "content": "Mặt trăng là gì của trái đất?" },
        {"role": "assistant", "content": "Đó một vệ tinh tự nhiên của trái đất"},
        { "role": "user", "content": "Khoảng cách giữa chúng là bao nhiêu?" }
    ]
}
```