2025

Lesson 07

Low Code LLM App Builder (Part 1)

Flowise

Introduction

- Learn to develop low code LLM application using open-source low-code tool.
- Many tools are available. They are: 1) Flowise, 2) LLMStack, 3) Superagent, 4) Langflow, 5) Dify etc.
- Flowise AI is a low-code/no-code platform that simplifies the development of application powered by Large Language Models (LLMs).
- Flowise provides a visual and user-friendly drag-and-drop GUI interface, making it accessible to both technical and non-technical users.
- Individuals with little programming experience can effortlessly create these LLM applications without the need to write any code.
- Advantageous for organizations striving to rapidly build prototypes and develop LLM applications in an agile manner.

Flowise & LLM Frameworks

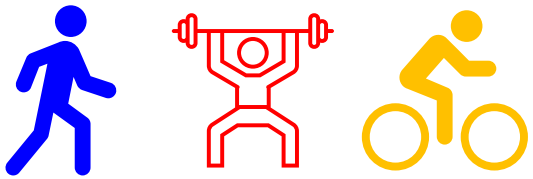
- The LangChain/LlamaIndex frameworks made it easy to build LLM applications.
- By abstracting objects like chains, this framework gives us the power to compose complex workflow to solve interesting tasks like Chatbots over documents, personal assistants, semantic search engines etc.
- Framework requires you to code in Python or JavaScript programming language.
- Flowise goes further (together with LangChain/LlamaIndex) by providing an interactive User Interface (UI).

Flowise / Hugging Face Space

Flowise Installation (Hugging Face)

- Familiarity with installation procedures fosters confidence in handling the software, boosting your technical proficiency and adaptability.
- Many ways to install/deploy Flowise (Chatflow).
- We will be using Hugging Face to host Flowise.

Hugging Face

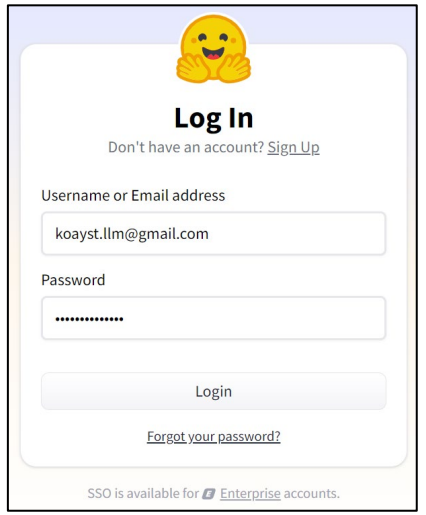


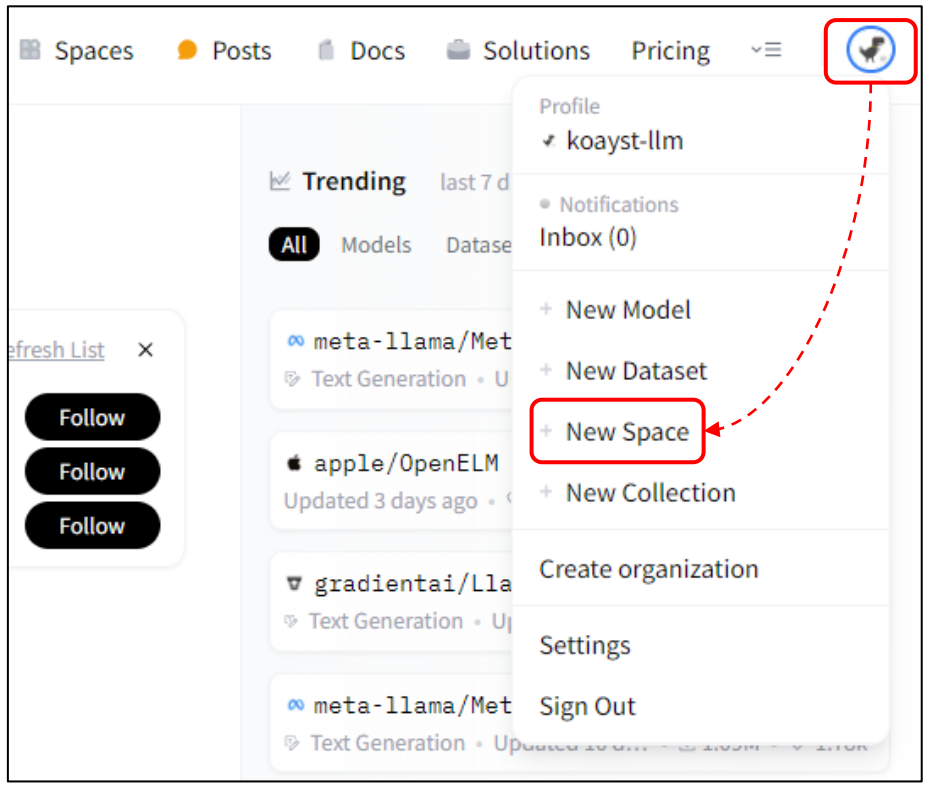
Login Hugging Face

- Login in to Hugging Face.

  https://huggingface.co/login
- Sign up a Hugging Face account if you don't have one. It's FREE !
- Follow the instruction as published in Flowise to create "Space" to run Flowise.

  https://docs.flowiseai.com/configuration/deployment/hugging-face

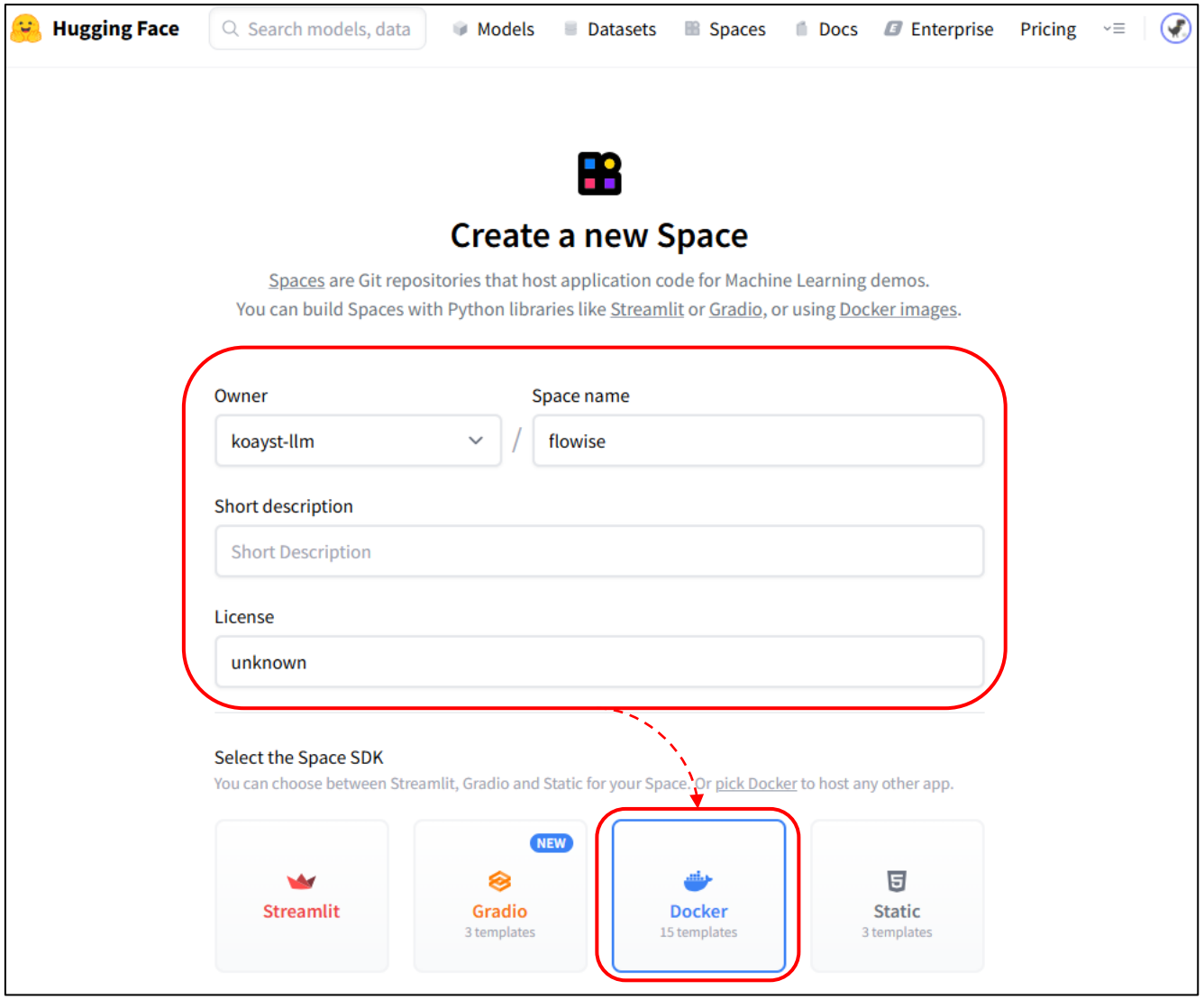


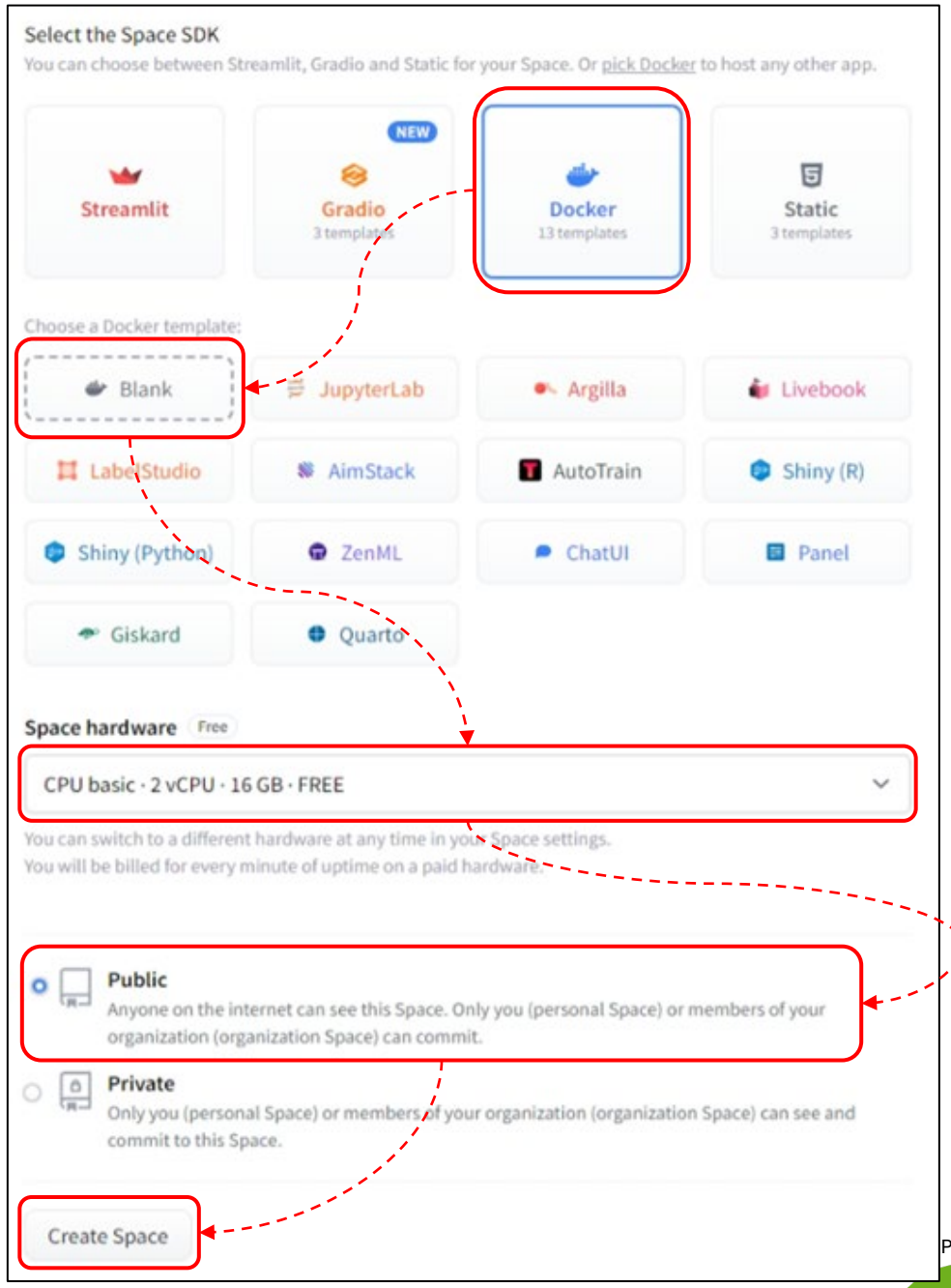


Step 1

Instruction:
Read from left to right, top to bottom

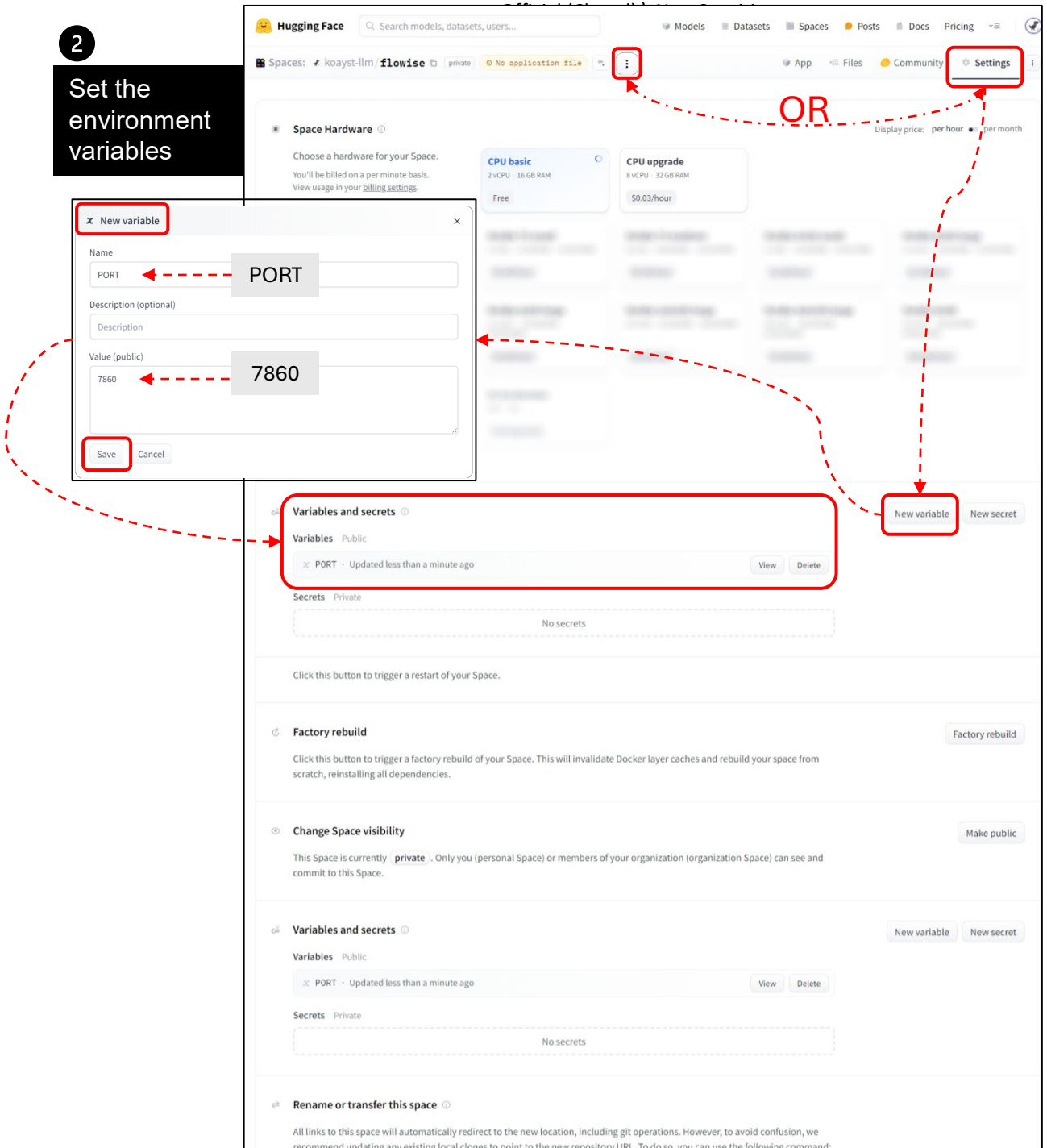
1 Create a new space





Step 2

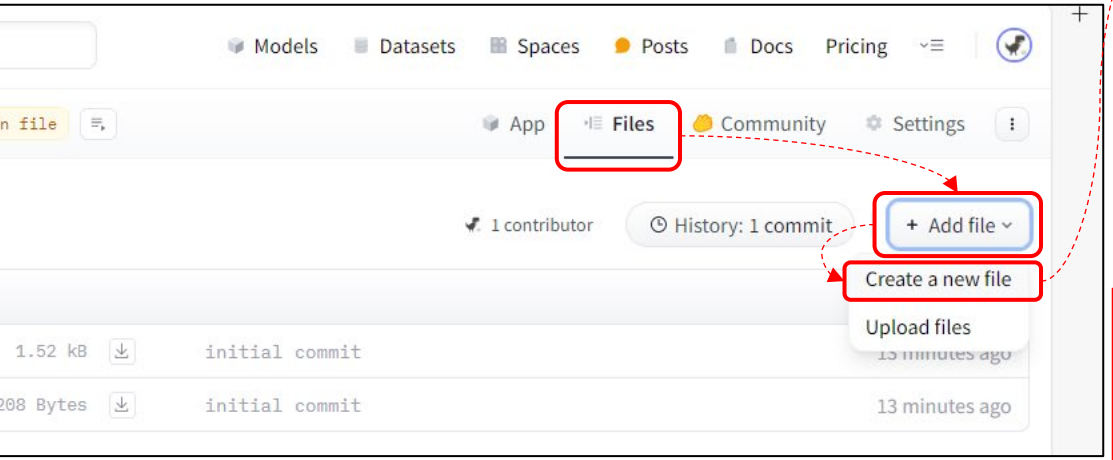
2 Set the environment variables



Instruction:
Read from left to right, top to bottom

3

Create a Dockerfile



Go to: https://docs.flowiseai.com/configuration/deployment/hugging-face to copy the Dockerfile text

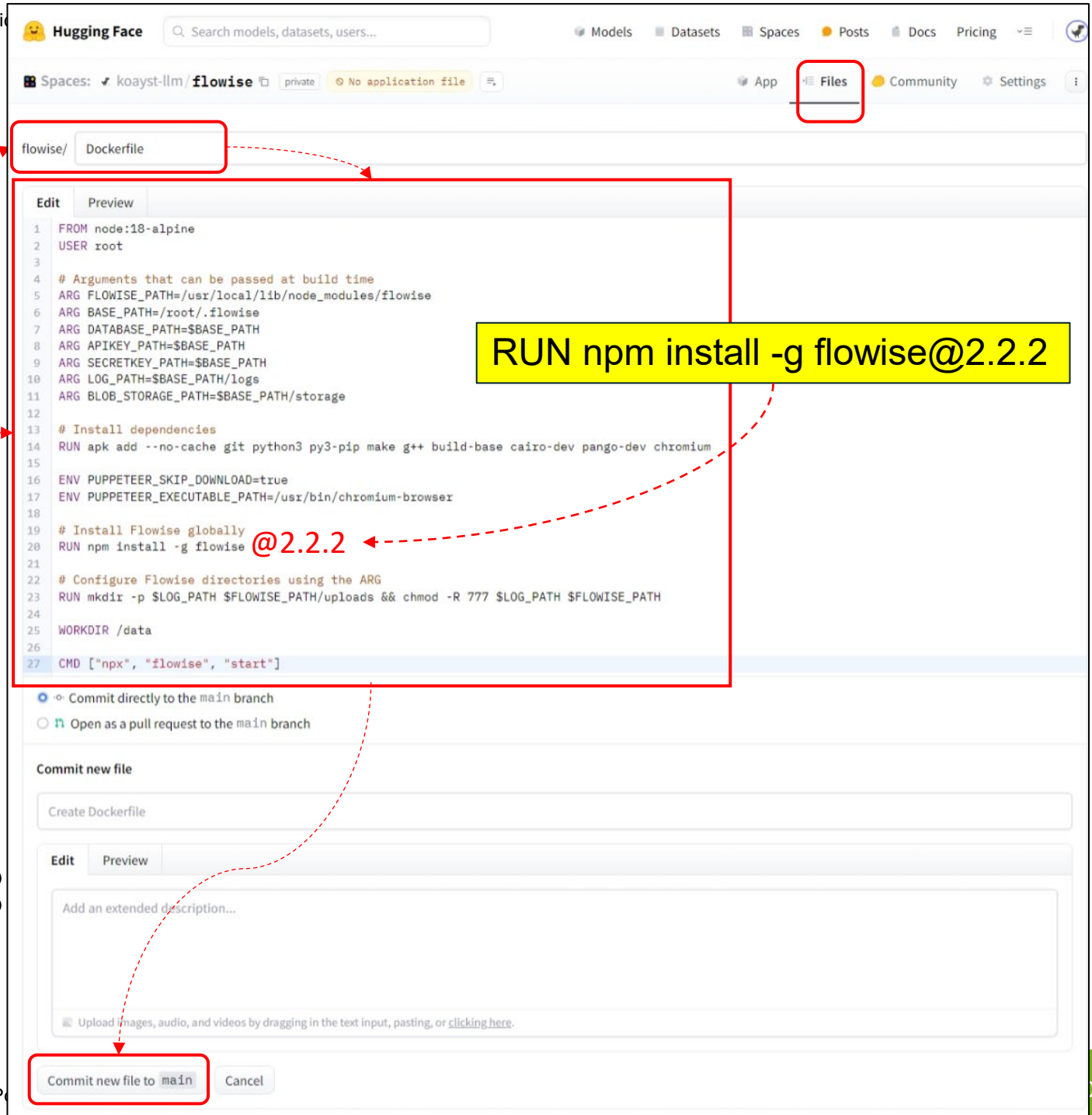
Create a Dockerfile

1. At the files tab, click on button ***+ Add file*** and click on **Create a new file** (or Upload files if you prefer to)
2. Create a file called **Dockerfile** and paste the following:

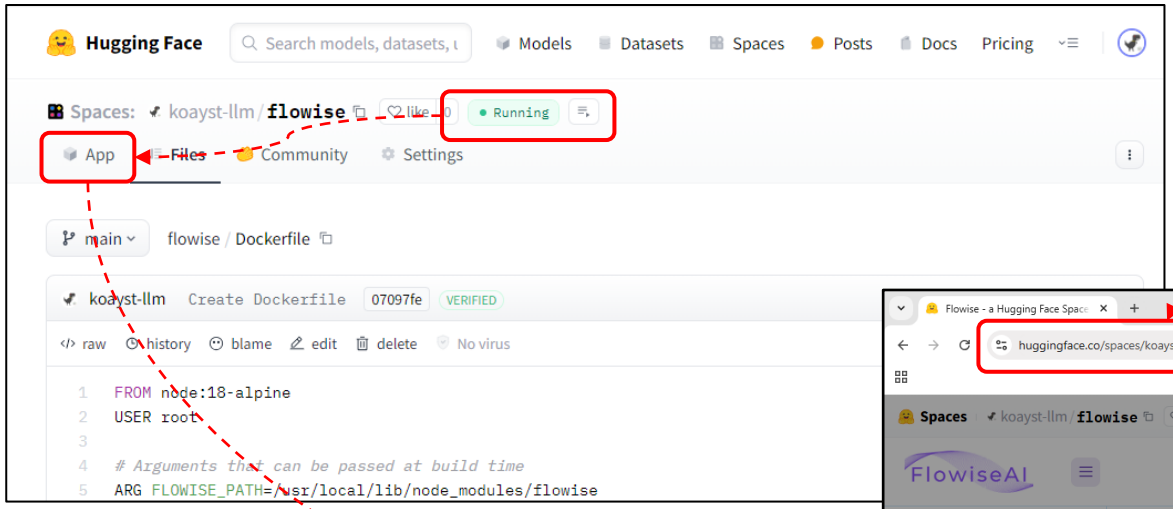
```
FROM node:18-alpine
USER root

# Arguments that can be passed at build time
ARG FLOWISE_PATH=/usr/local/lib/node_modules/flowise
ARG BASE_PATH=/root/.flowise
ARG DATABASE_PATH=$BASE_PATH
ARG APIKEY_PATH=$BASE_PATH
ARG SECRETKEY_PATH=$BASE_PATH
```

Copy

Copy and Paste here

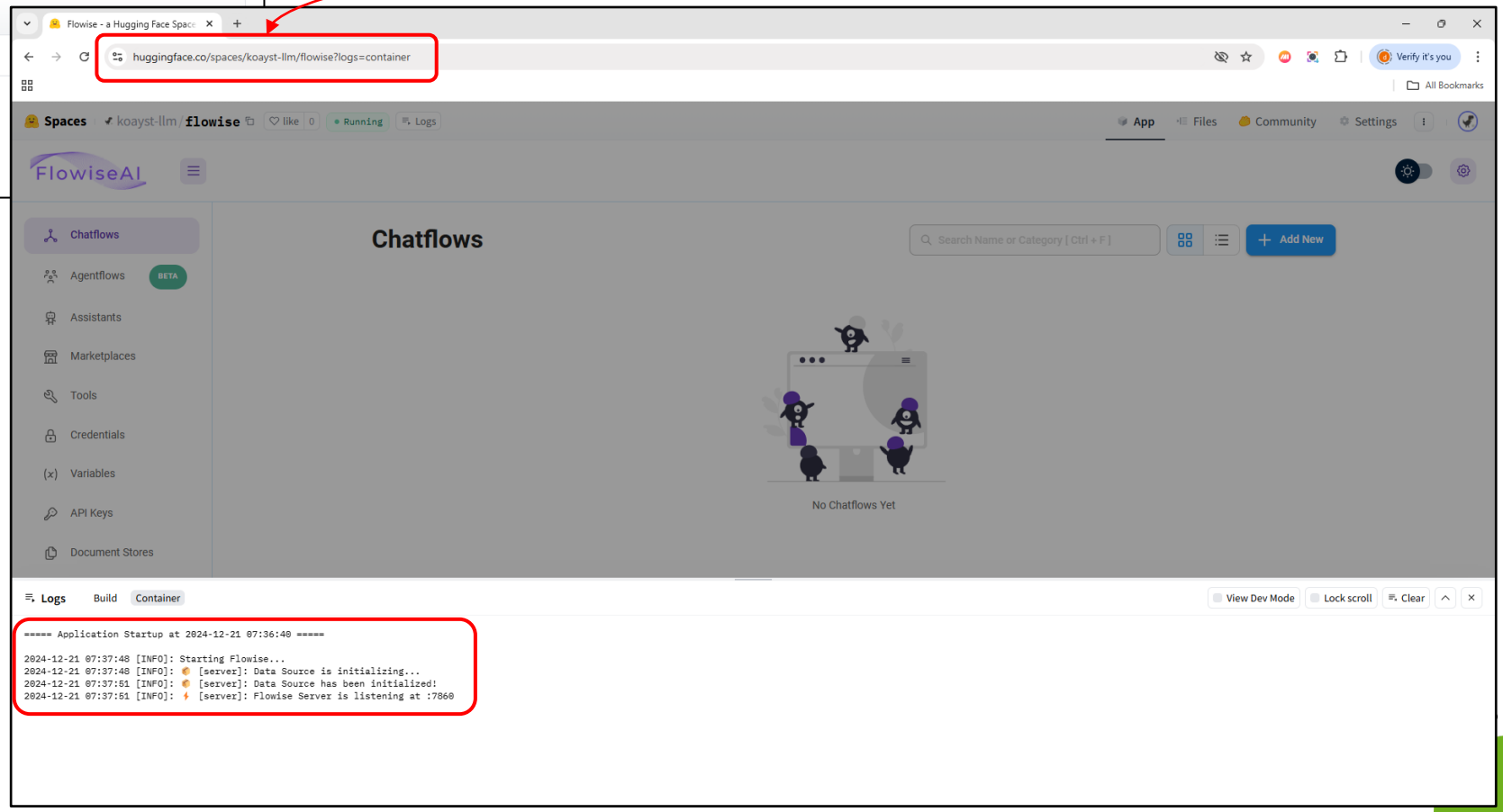


Step 4: Running Flowise



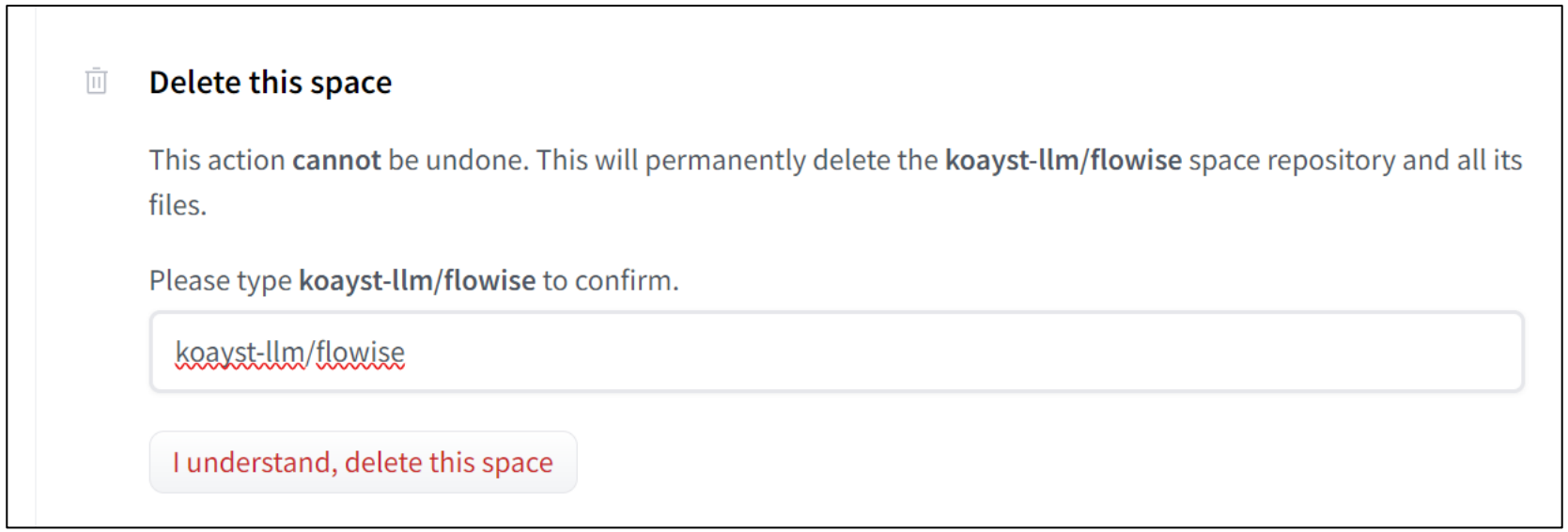
Take note of this URL. You can share it with others to use your Flowise

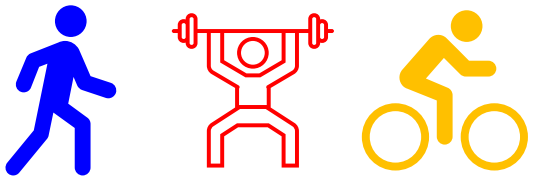
Be patient: Once Flowise starts running, click the “grey” area to start using Flowise



Delete Space

- Once you are done with Flowise, a good practice is to delete the Space from Hugging Face.
- Go to Setting of your Flowise-Space, search for your Space, scroll to the end and type the “word” to confirm the deletion.

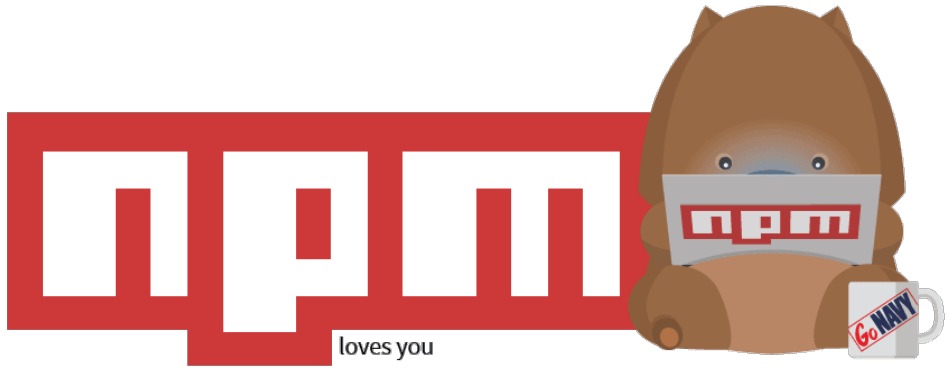


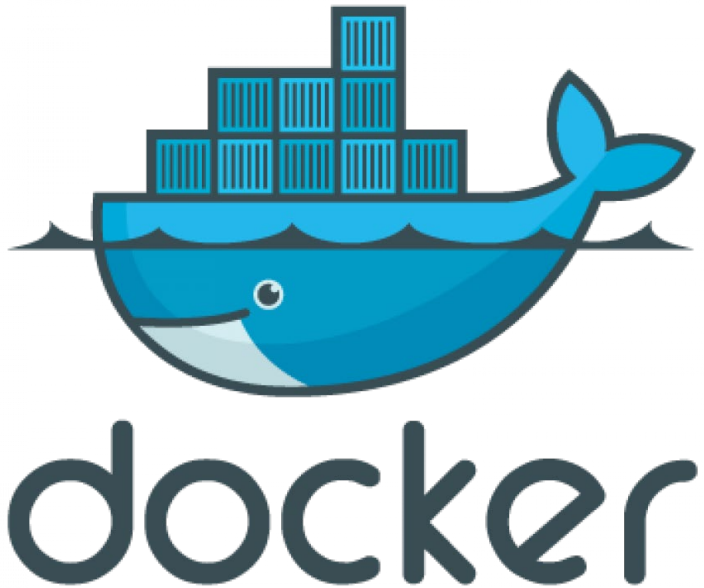


Installation Laptop (optional)

Installation and Setup

- Prerequisite
  - Install latest NodeJS.
- Setup
  - Method 1:
    - Install Flowise via npm.
    - Start Flowise.
  - Method 2:
    - Git clone the open-source project.
      - Docker Compose
      - Docker-compose up the local “.env” to run Flowise
    - Docker-compose stop to stop running Flowise
      - Docker Image
      - Build and Run Docker image



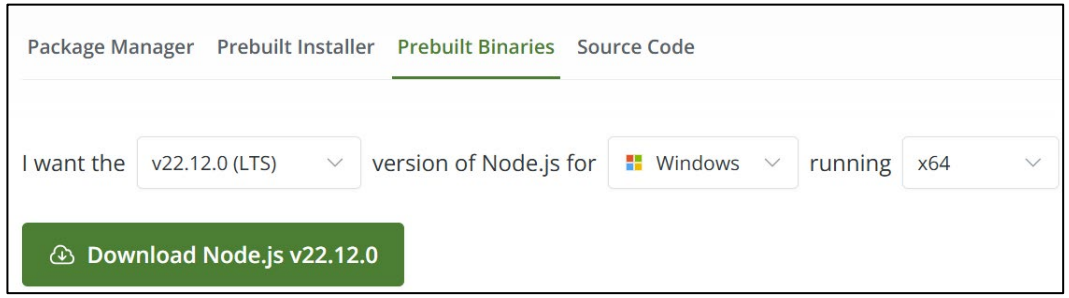


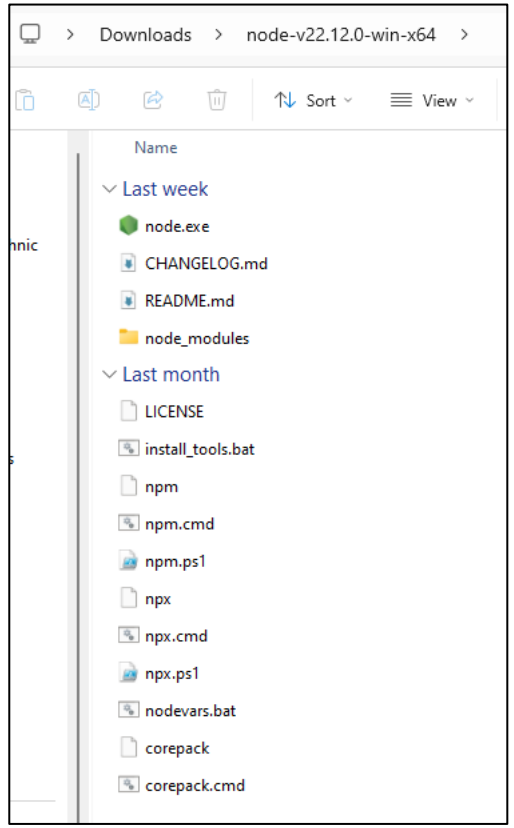
Reference: https://docs.flowiseai.com/getting-started

Installation & Setup

The steps listed are meant for Windows OS

1) Download the latest prebuilt binary NodeJS®:
   - v22.12.0 (LTS) https://nodejs.org/en/download/prebuilt-binaries
2) Unzip the just downloaded file to a directory: node-v22.12.0-win-x64.
3) Open a Command Prompt and navigate to the directory: node-v22.12.0-win-x64.

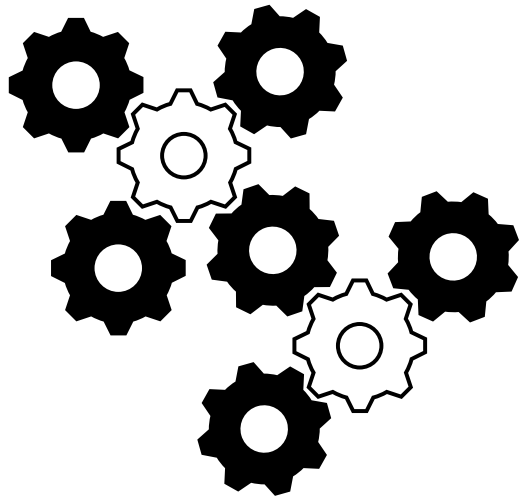


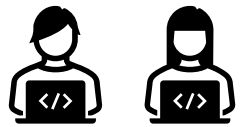


- LTS (Long Term Support) version v20.15.1 is recommended.
- For production environments where stability and compatibility are crucial, the LTS version provides a reliable choice. The current version offers the latest features and improvements for developers who want to explore new functionalities.

Installation & Setup

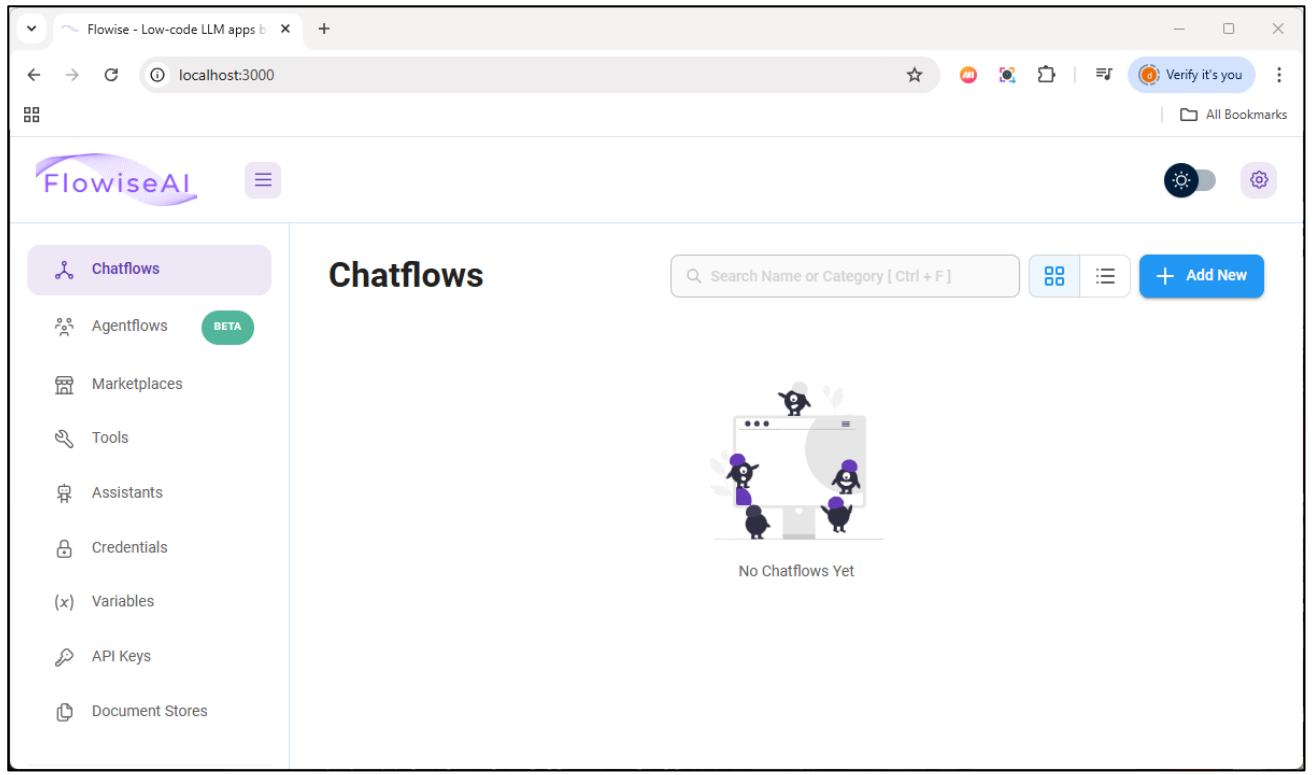
1) Assuming you have unzipped the zip file to directory C:\Users\<Your_username>\Downloads\node-v22.12.0-win-x64, set the environment variable by:
   - `set PATH=C:\Users\Your_username\Downloads\node-v22.12.0-win-x64;%PATH%`
2) Install Flowise
   - `npm install -g flowise@2.2.1`
   - `npm fund (optional)`
3) Start Flowise (default port is 3000)
   - `npx flowise start --DEBUG=true`
4) To keep Flowise updated
   - `npm update -g flowise`
5) To Uninstall Flowise when you are done with using Flowise
   - `npm uninstall -g flowise`





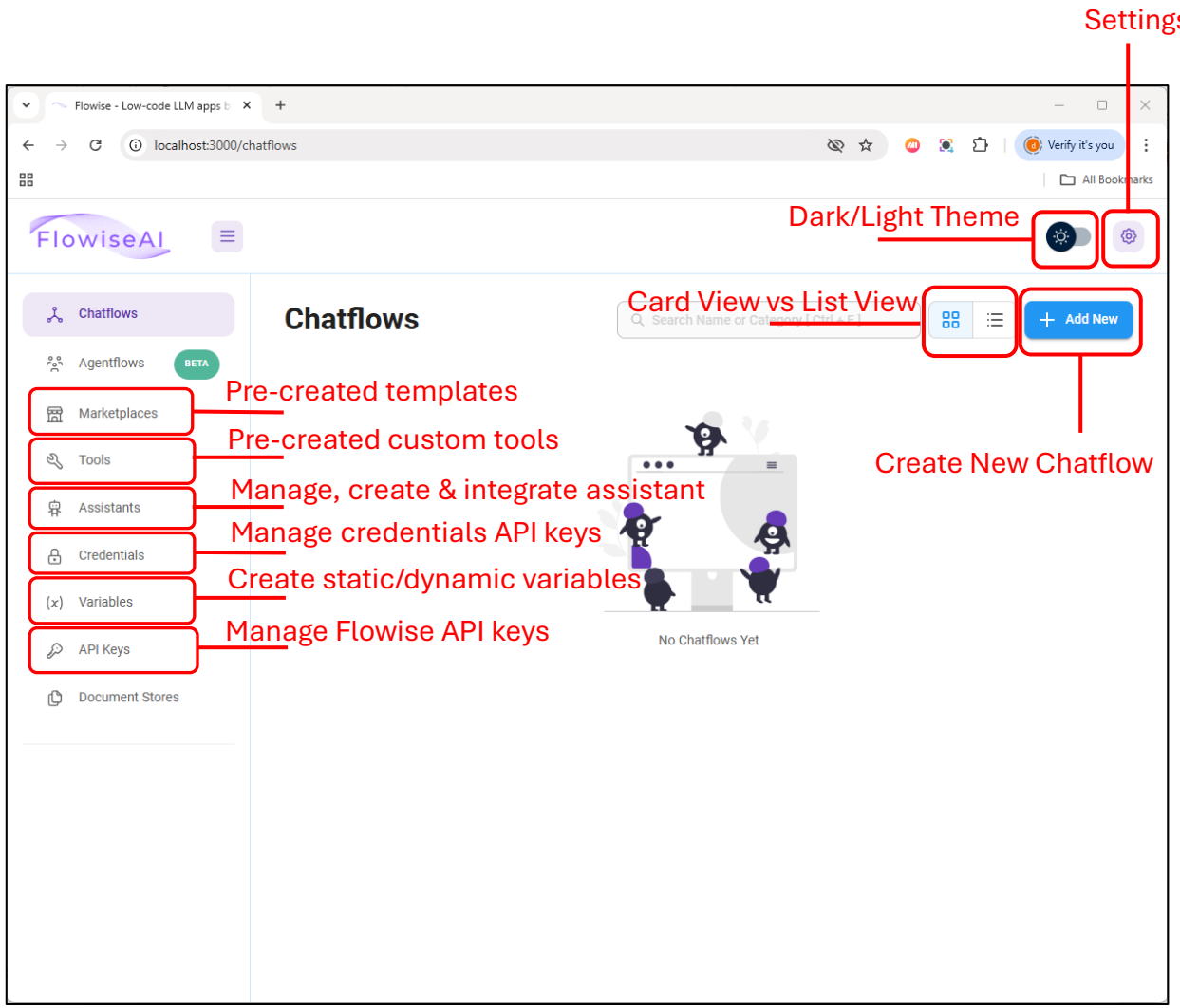
Installation Test

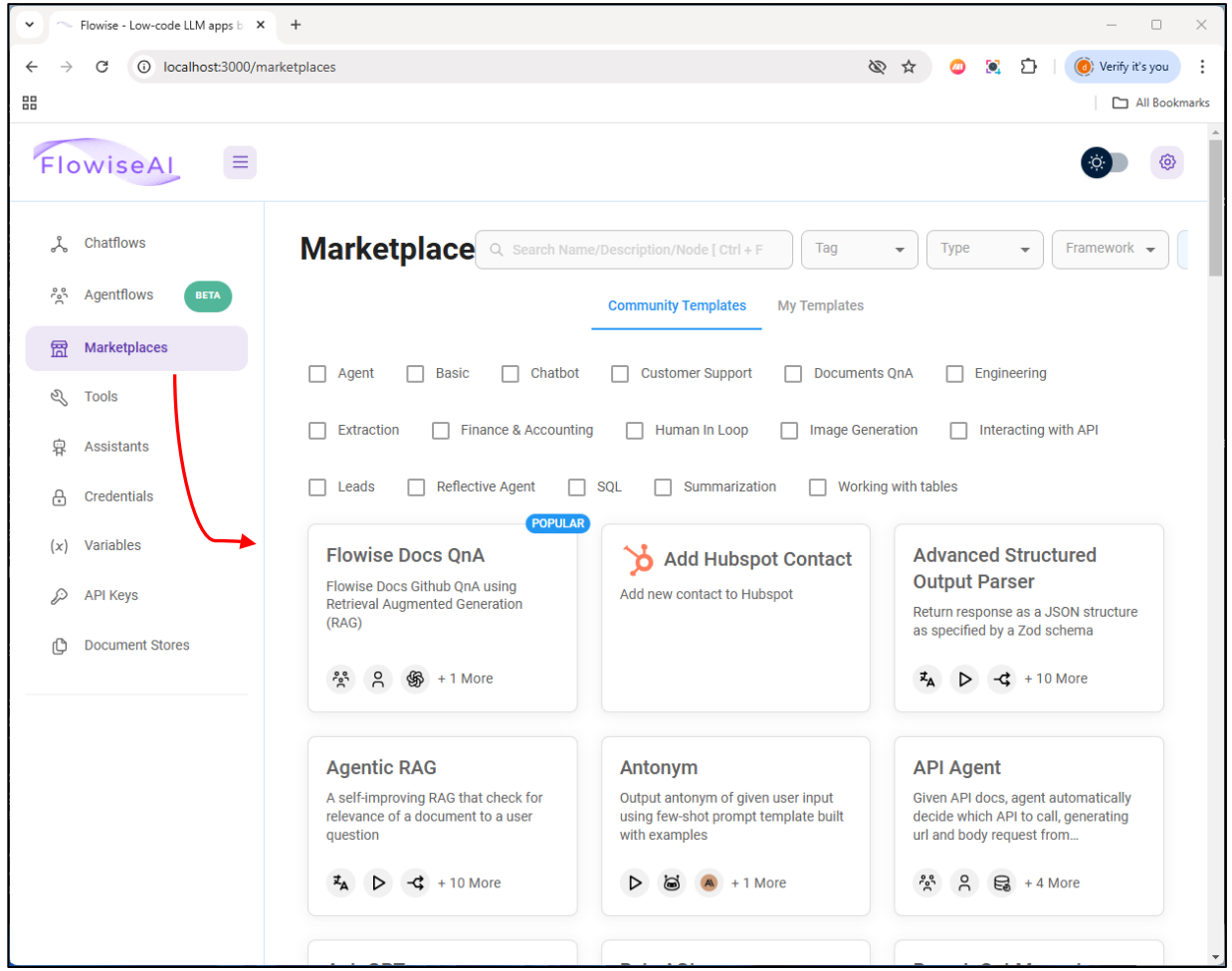
- Open http://localhost:3000 with a browser
- CTRL-C at Command Prompt to shutdown Flowise




```
C:\Users\<Your_Username>\Downloads\node-v22.12.0-win-x64>npx flowise start --DEBUG=true
2024-12-09 14:46:12 [INFO]: Starting Flowise...
(node:3344) [DEP0040] DeprecationWarning: The `punycode` module is deprecated. Please use a userland alternative
instead.
(Use `node --trace-deprecation ...` to show where the warning was created)
2024-12-09 14:46:13 [INFO]: ⚡ [server]: Flowise Server is listening at 3000
2024-12-09 14:46:13 [INFO]: 📦 [server]: Data Source is being initialized!
2024-12-09 14:49:01 [INFO]: 📦 [server]: Data Source has been initialized!
2024-12-09 14:53:18 [INFO]: Shutting down Flowise...
Terminate batch job (Y/N)? y
```

Flowise Dashboard





Accounts & API Keys

- To facilitate your learning:
  - You need to possess some API keys to conduct your experiment.
  - Sometimes you will need to register for an account with other service provider to obtain an API key to test run or complete your app development.
  - It will be easier if you have a Google account to register during account registration.
  - Please kindly handle the API keys with care.
  - Do not share your API keys with others.

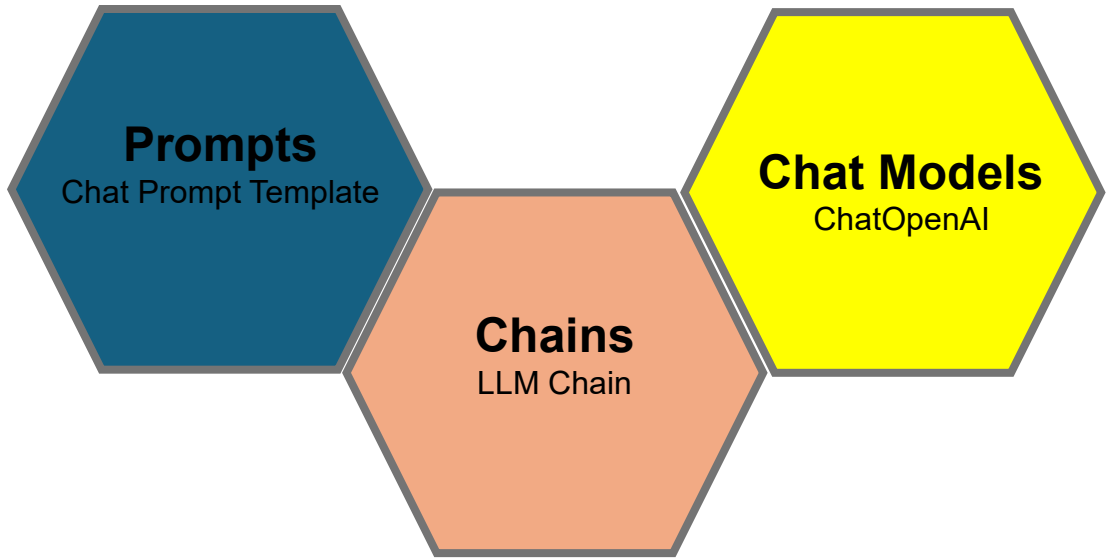
Activity: Translator

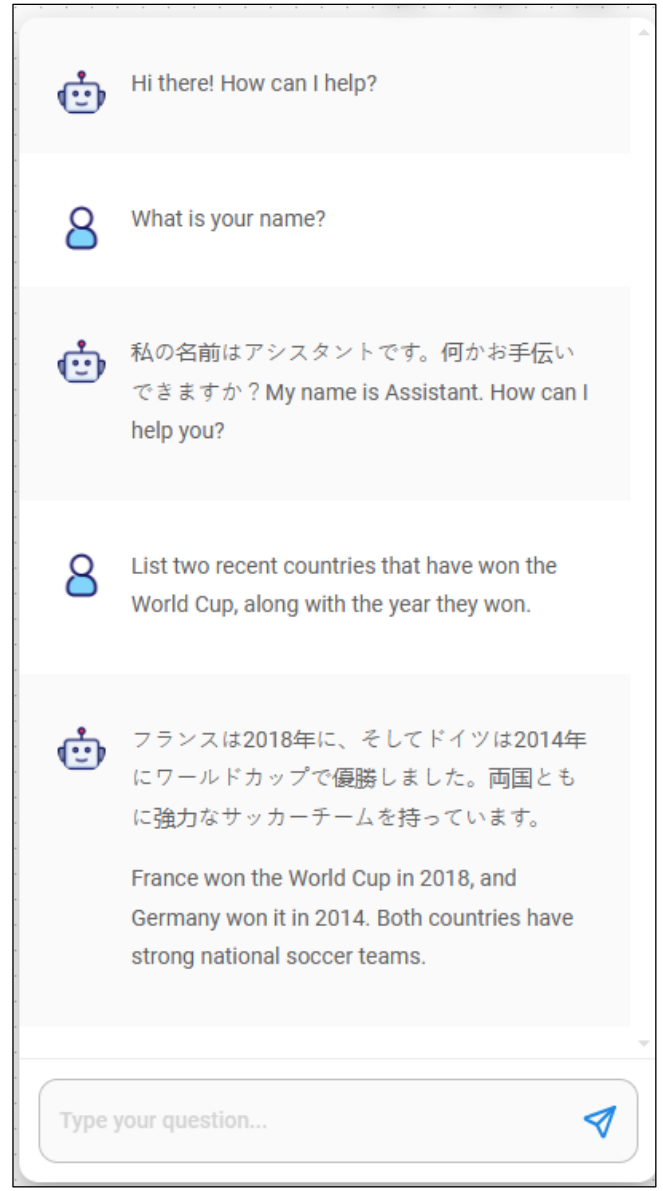
Activity: Translator

- Flowise was successfully installed on your computer/laptop.
- Let’s create our first LLM application using Flowise.
- Familiarise ourselves with the Flowise UI.
- Learn how to use Flowise components to build a simple Chatbot application.
- Experiment by asking questions in English and receiving responses in both English and Japanese sentences.
- You are encouraged to explore switching to different languages once the basic functionality is understood and running properly.

Activity Map: Translator

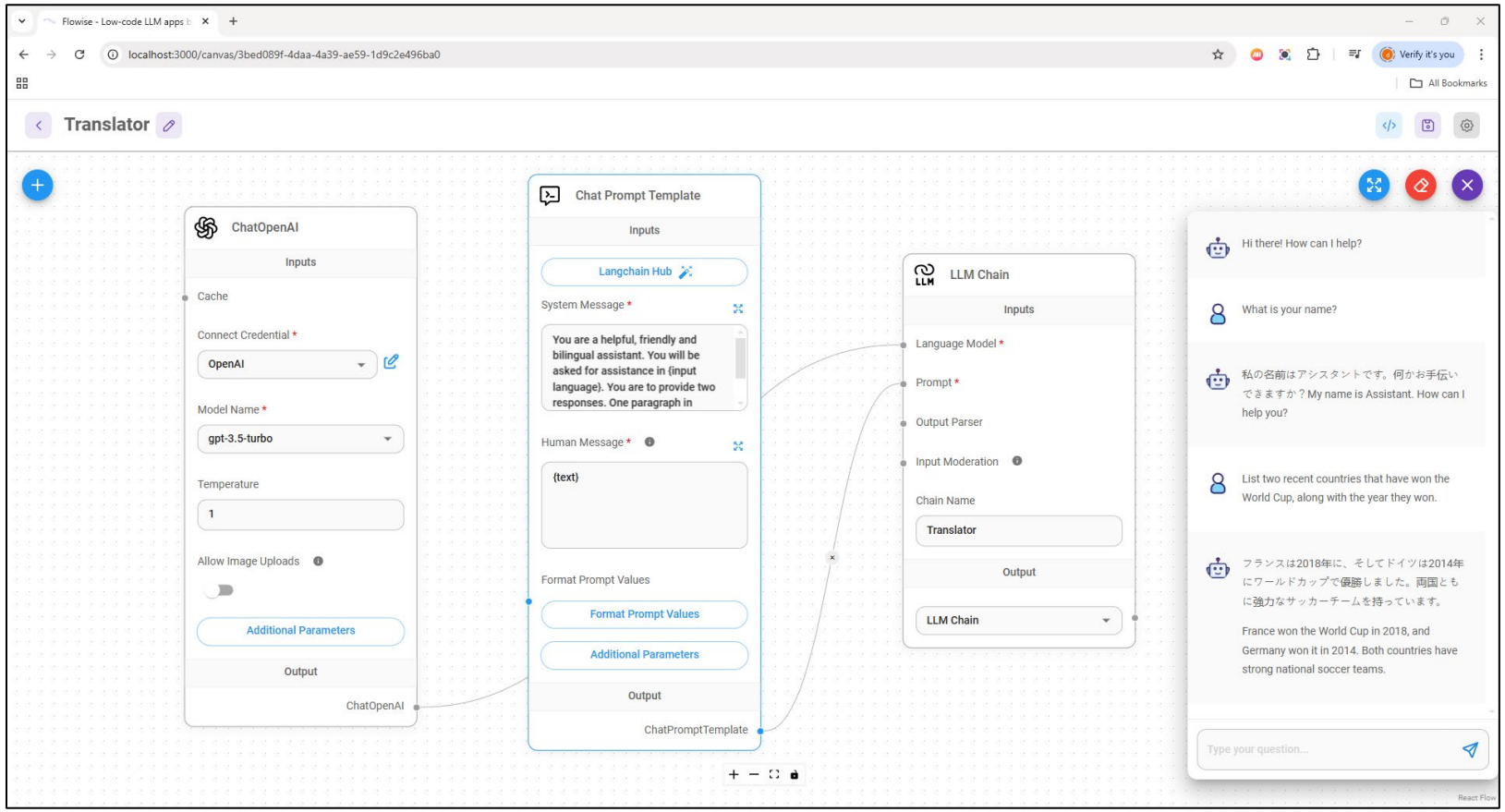
- You will need the following:
  - ☑ OpenAI API Key [OpenAI]
  - ☑ cURL [curl://]
- Flowise setup





First LLM Application

- Let's build our first AI LLM application using Flowise.
- This exercise aims to familiarise you with Flowise UI.
- We will build a simple English-to-Japanese translator.
- Feel free to try another language after you completes the exercise.



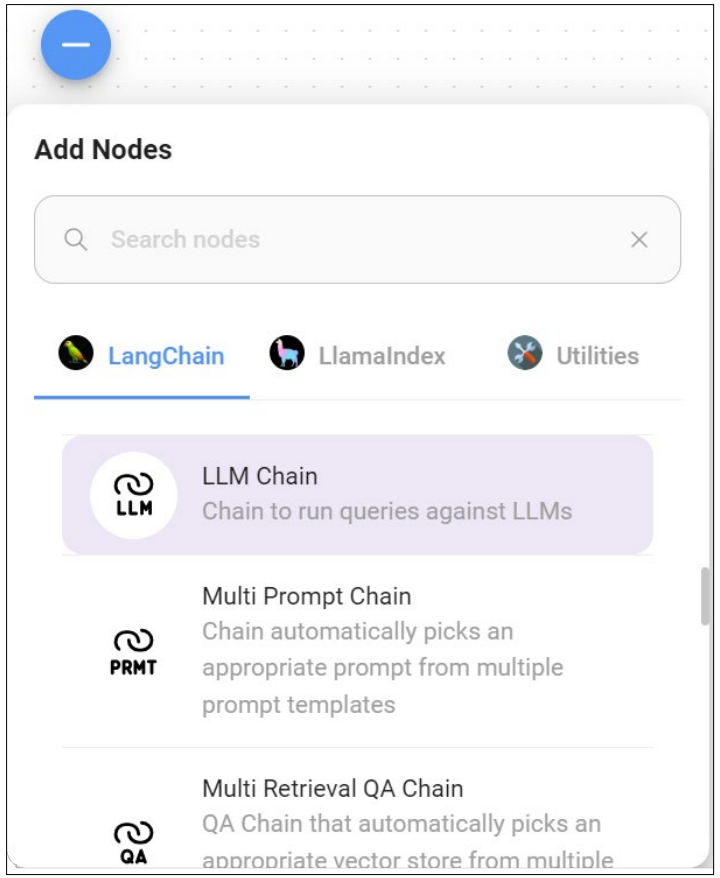
First LLM Application

- All Chatflows should contain at least one agent or one chain.
- Steps:
  - At Chatflow dashboard, click “Add New” 

, a new “Untitled Chatflow” canvas is created. You will create the AI app using the blank canvas by drag and drop.
  - Click  to save the new Chatflow. Name your saved Chatflow as “Translator”.
  - Click  and look under “Chains”, drag “LLM Chain” and drop it to the blank canvas.

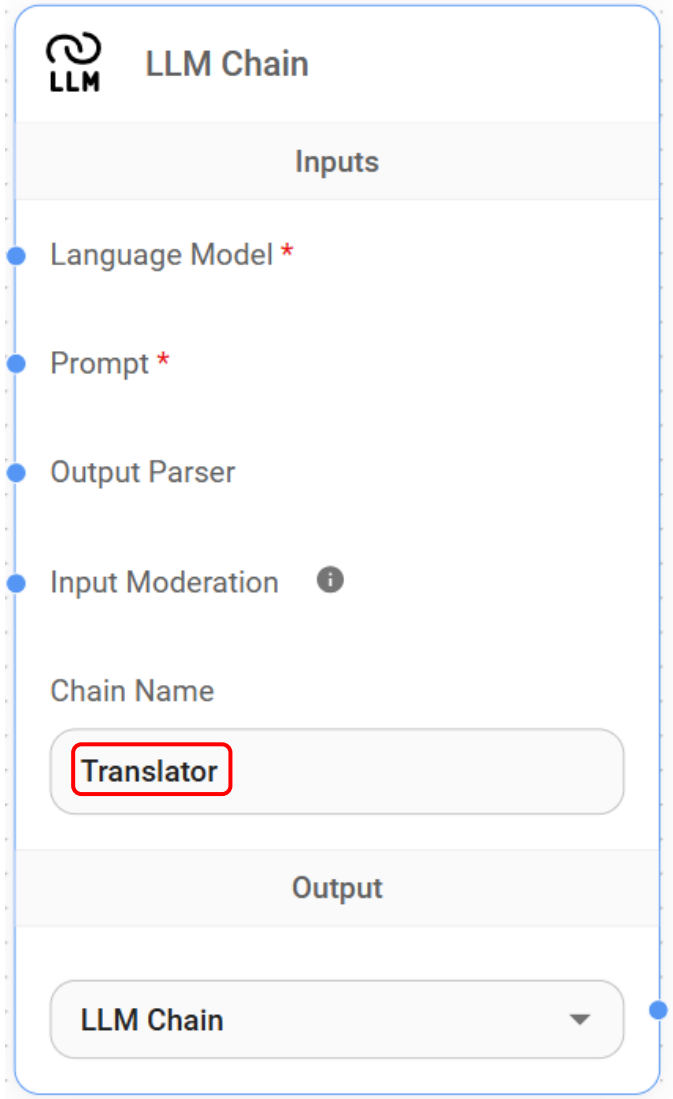
Translator

- Create a Chains ➔ LLM Chain node.



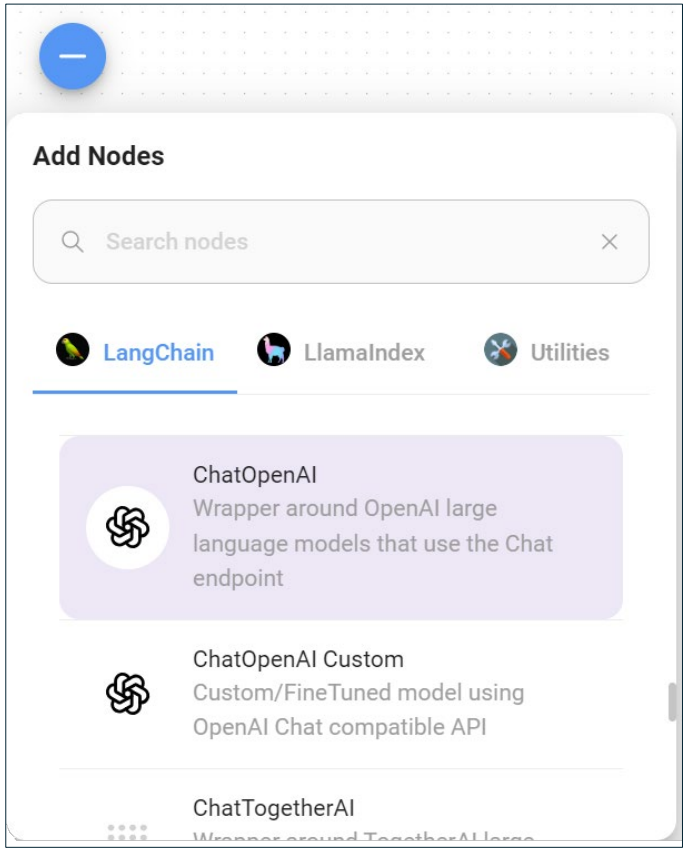
Drag & Drop

Canvas



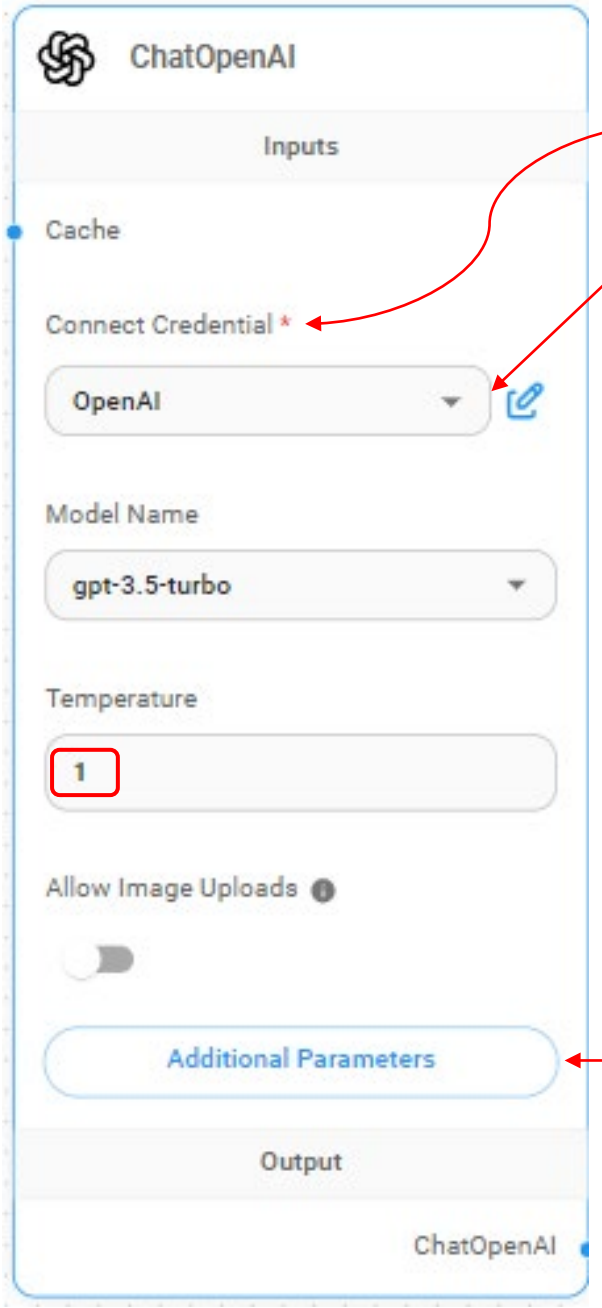
Translator

- Create a Chat Models ➔ ChatOpenAI node.



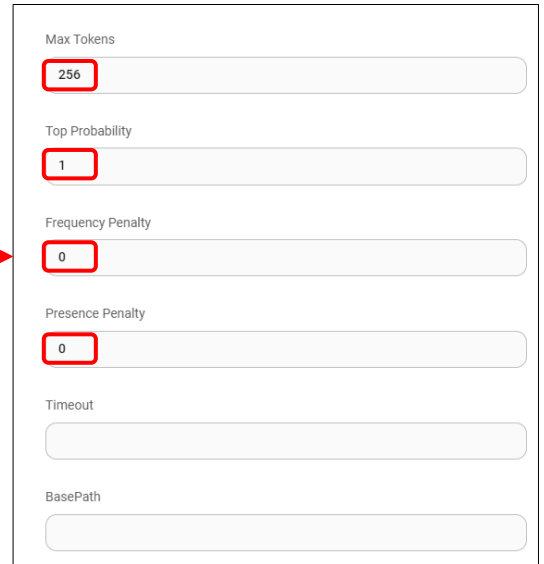
Drag & Drop

Canvas



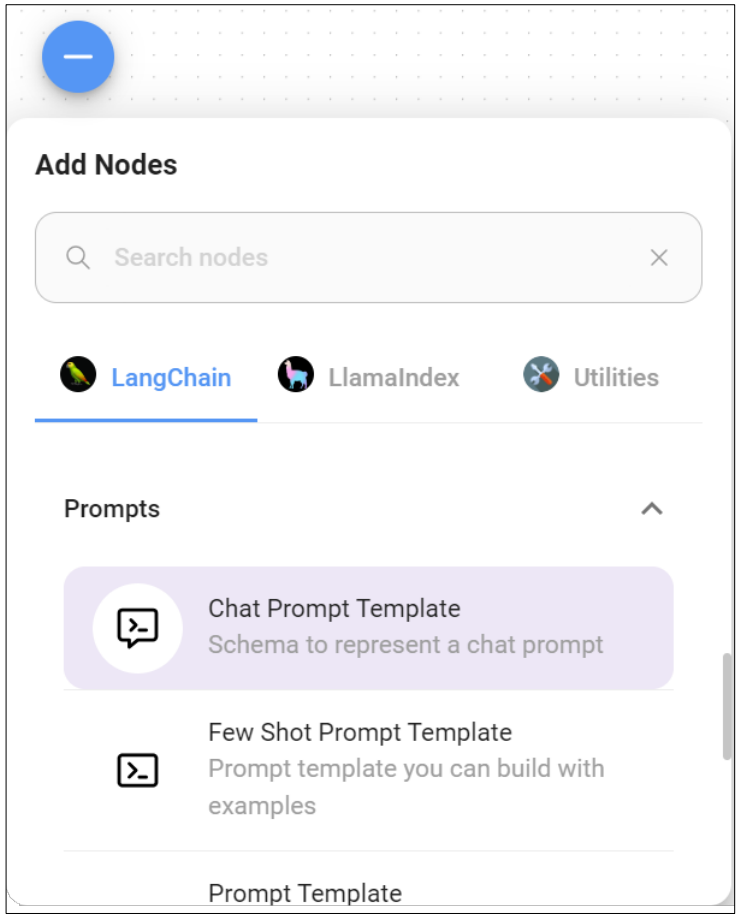
"*" means Mandatory

- Select "- Create New –"



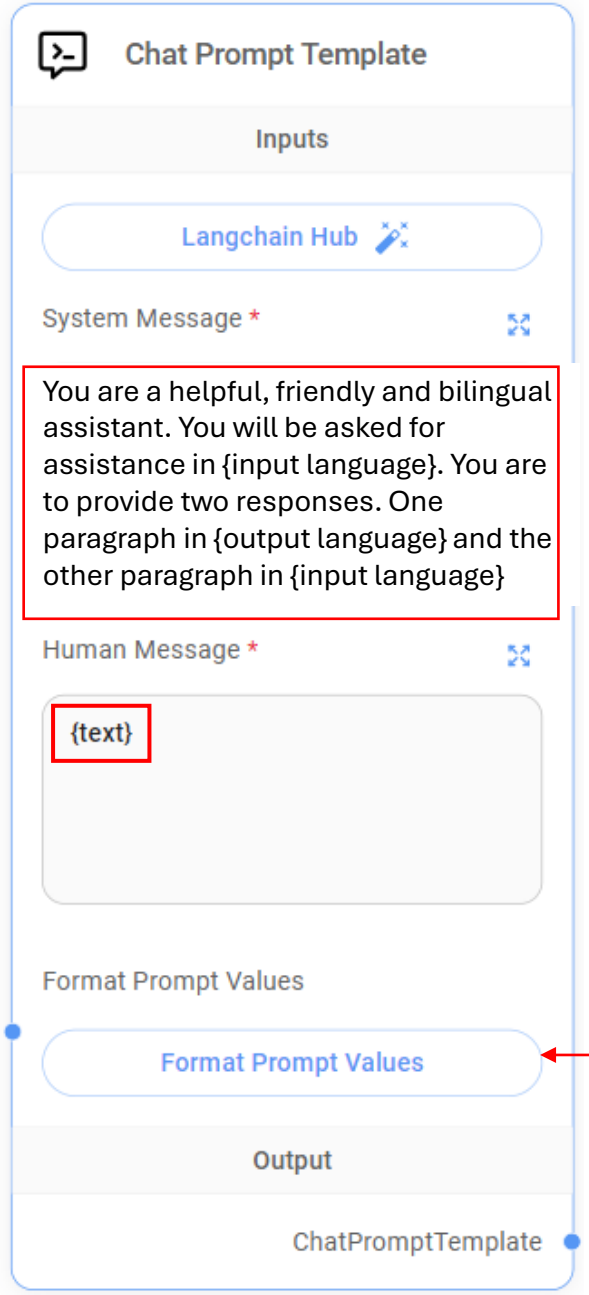
Translator

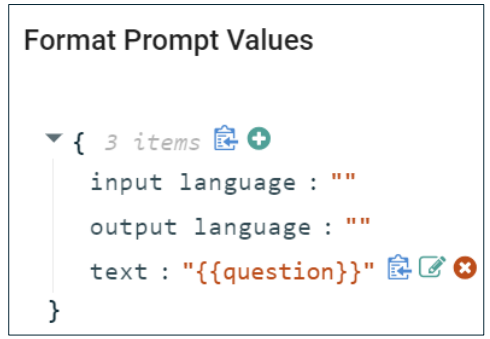
- Create a Prompt ➔ Chat Prompt Template node.



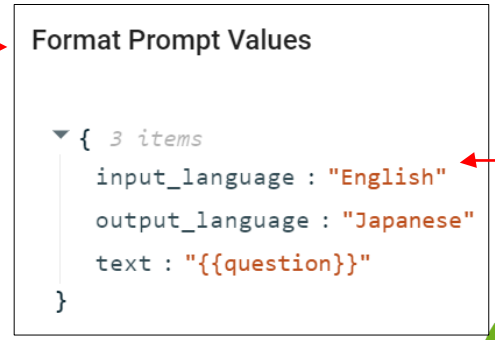
Drag & Drop

Canvas



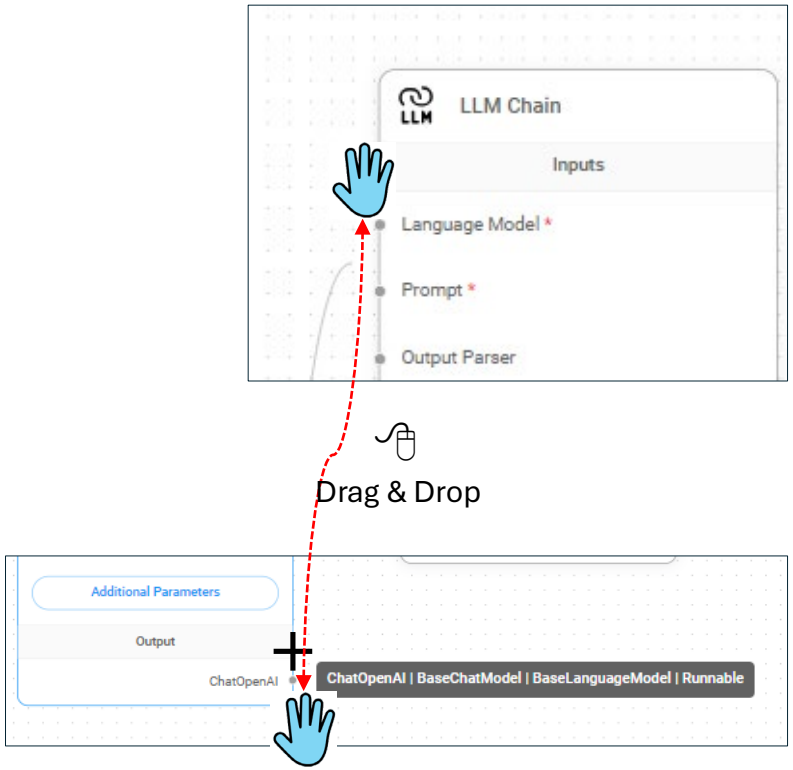


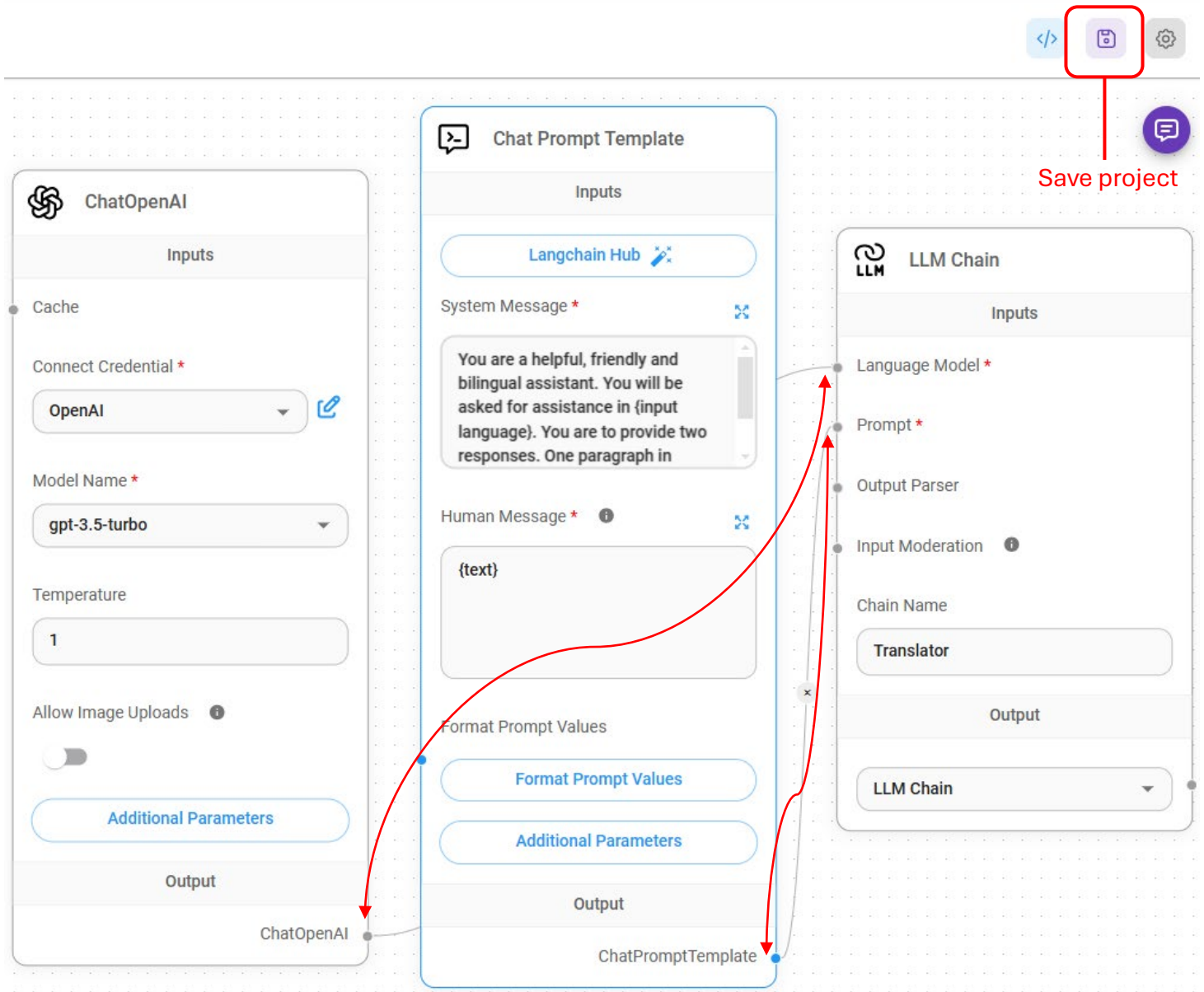
No need to enter the quotes



Translator

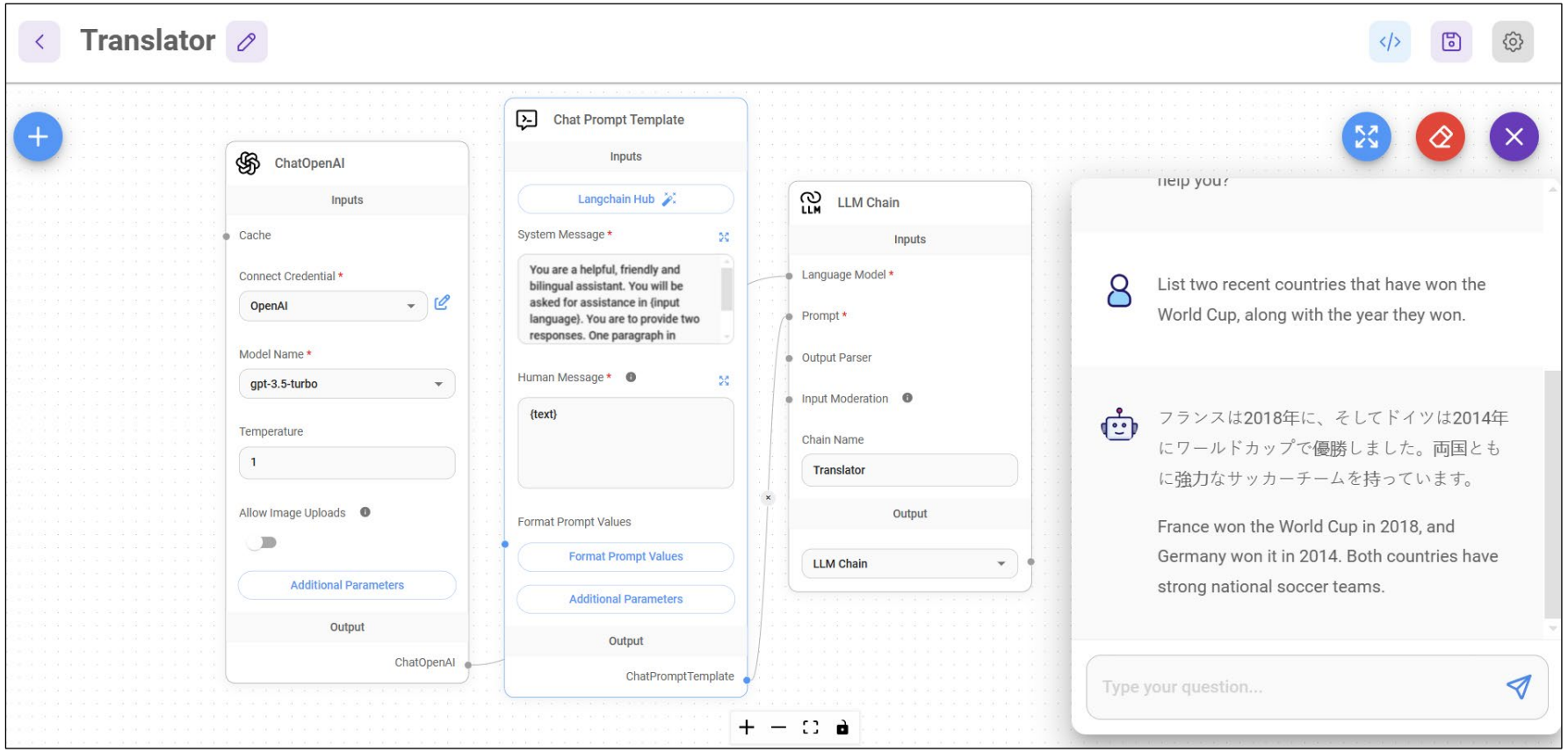
- Steps
  - Connect all the nodes.
  - Save the project.





Translator

- Anytime you want to test the translator Chatflow after you made changes, remember to SAVE the project first. Flowise does not auto-save your work.
- Click  to start chatting with the newly created AI LLM app.



Text Placeholders

```
System Message

You are a helpful, friendly and bilingual assistant. You will be asked for assistance in {input language}. You are to provide two responses. One paragraph in {output language} and the other paragraph in {input language}
```

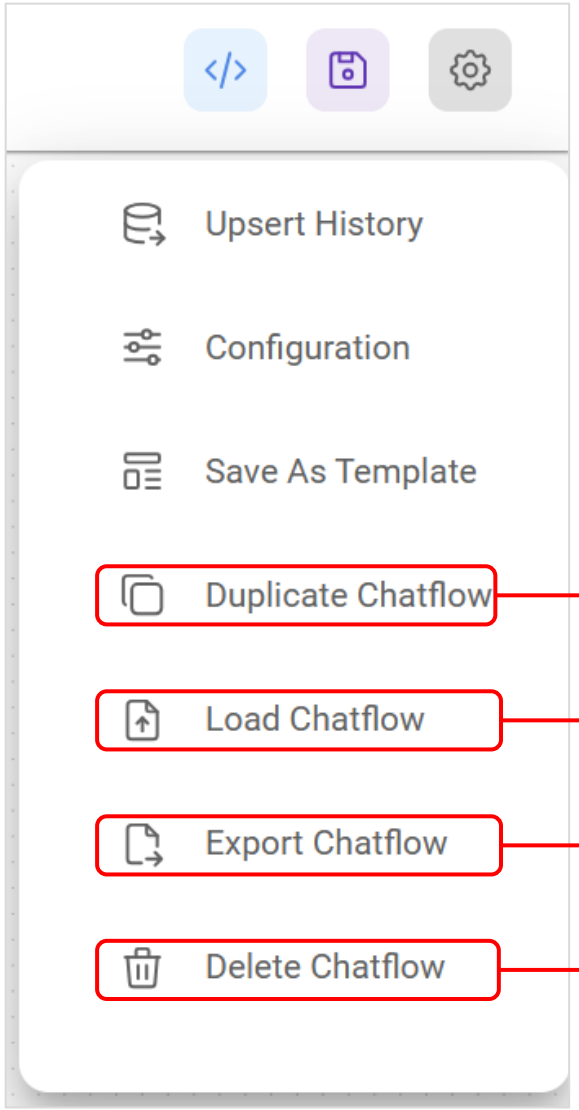
```
Human Message

{text}
```

Format Prompt Values

Additional Parameters

```
Format Prompt Values

{3 items
   input language:"English"
   output language:"Japanese"
   text:"{{question}}"
}
```

Saving Translator Chatflow

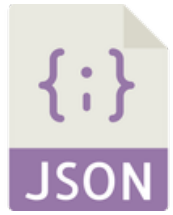


Duplicate Chatflow and stored in database

Load JSON as Chatflow

Save Chatflow as JSON

Deleted Chatflow stored in databse

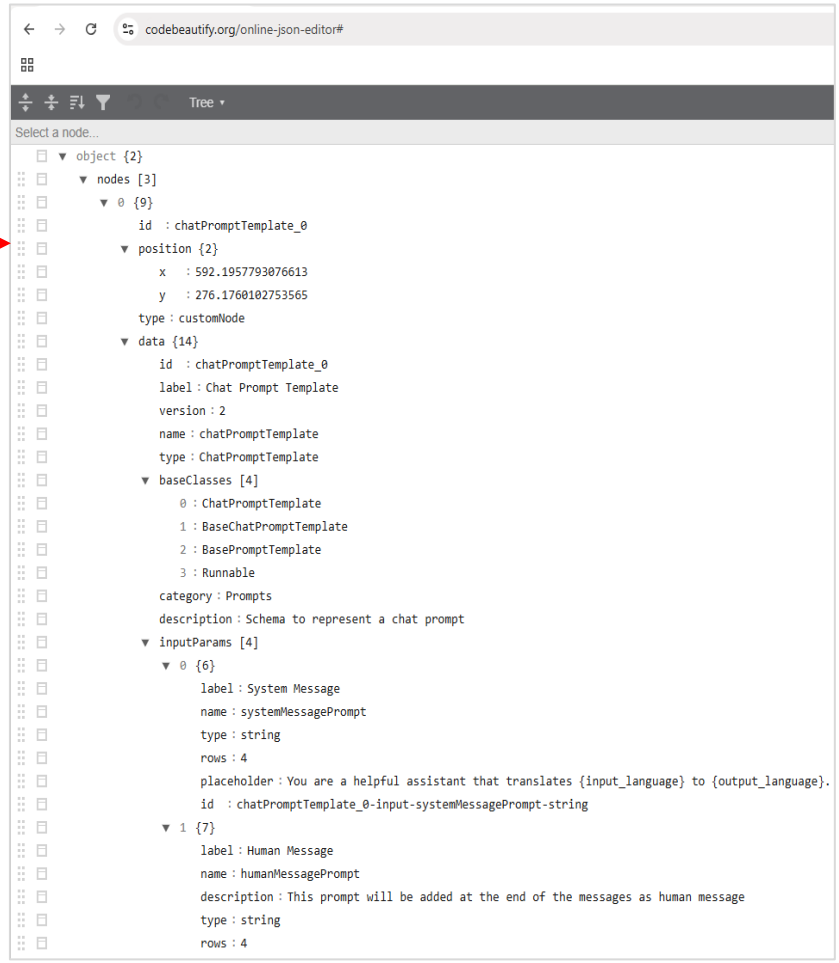


Translator Chatflow.json

import

export

Share your Chatflow by sharing the Translator Chatflow.json file



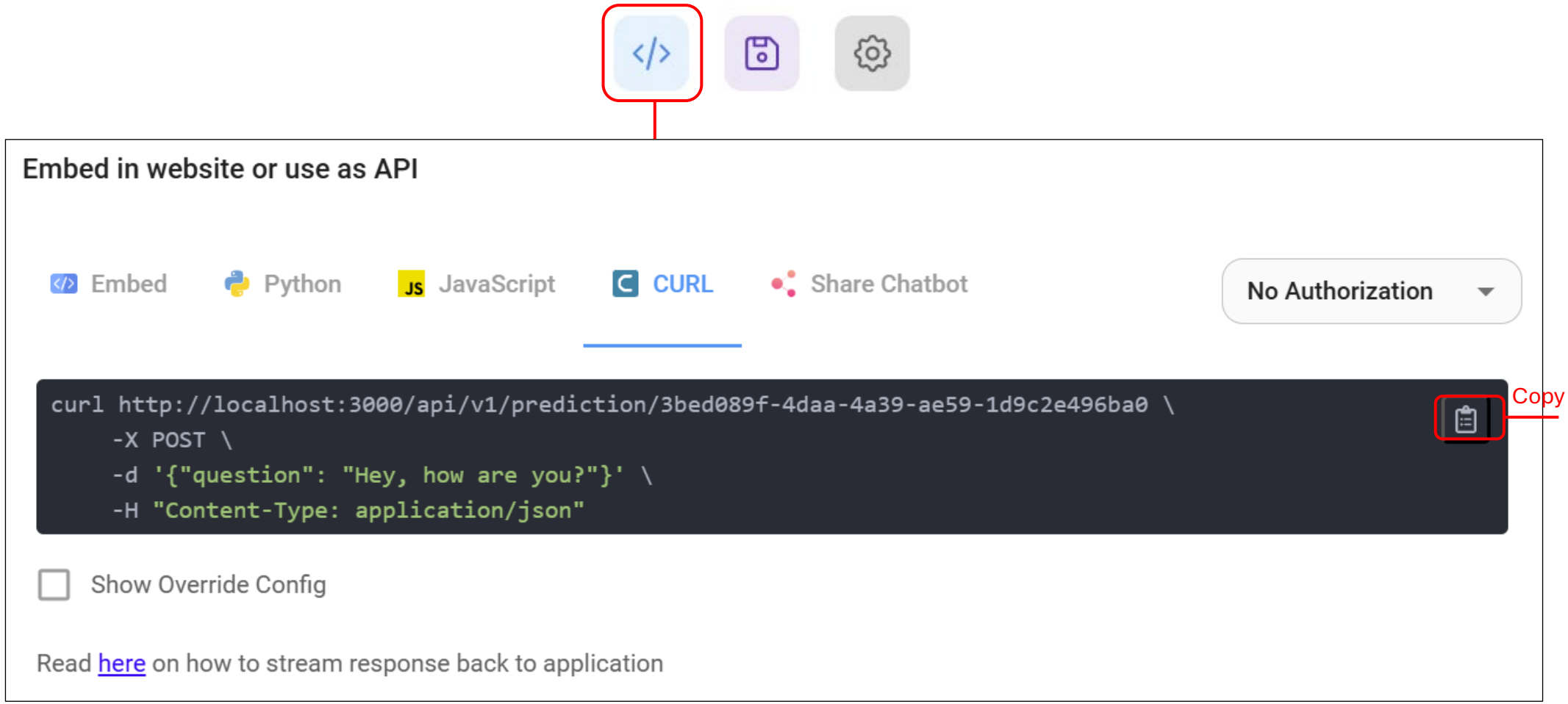
Flowise Deployment

Activity: API Endpoints

- Flowise provides several options for deployment.
- Issue curl command to chat with the LLM.
- Embed “<embed> HTML element” to “install” a chatbot in the HTML page to chat with the LLM.

API Endpoint (cURL)

- There are several methods to call your app. As shown below, the app can be called via Embed, Python, Javascript , cURL etc.



API Endpoint (cURL)

- The command text provided is meant to run on “Unix/Linux” based operating system.
- Minor modifications are required to get it run in a Command Prompt under Window OS.

```
curl http://localhost:3000/api/v1/prediction/3bed089f-4daa-4a39-ae59-1d9c2e496ba0 -X POST -d "{\"question\": \"Hey, how are you?\"}" -H "Content-Type: application/json“
```

cURL Installation

Steps:

1) Go to https://curl.se/windows/ to download curl for Windows i.e. curl for 64-bit i.e. curl-8.11.0_4-win64-mingw.zip.
2) Unzip the just downloaded file to a directory: curl-8.11.0_4-win64-mingw.
3) Open a Command Prompt and navigate to the directory: curl-8.11.0_4-win64-mingw/bin.
4) Run ➔ `curl http://localhost:3000/api/v1/prediction/3bed089f-4daa-4a39-ae59-1d9c2e496ba0 -X POST -d "{\"question\": \"Hey, how are you?\"}" -H "Content-Type: application/json"`

*Note: For the pink region shown above, you MUST replace it with your APP ID

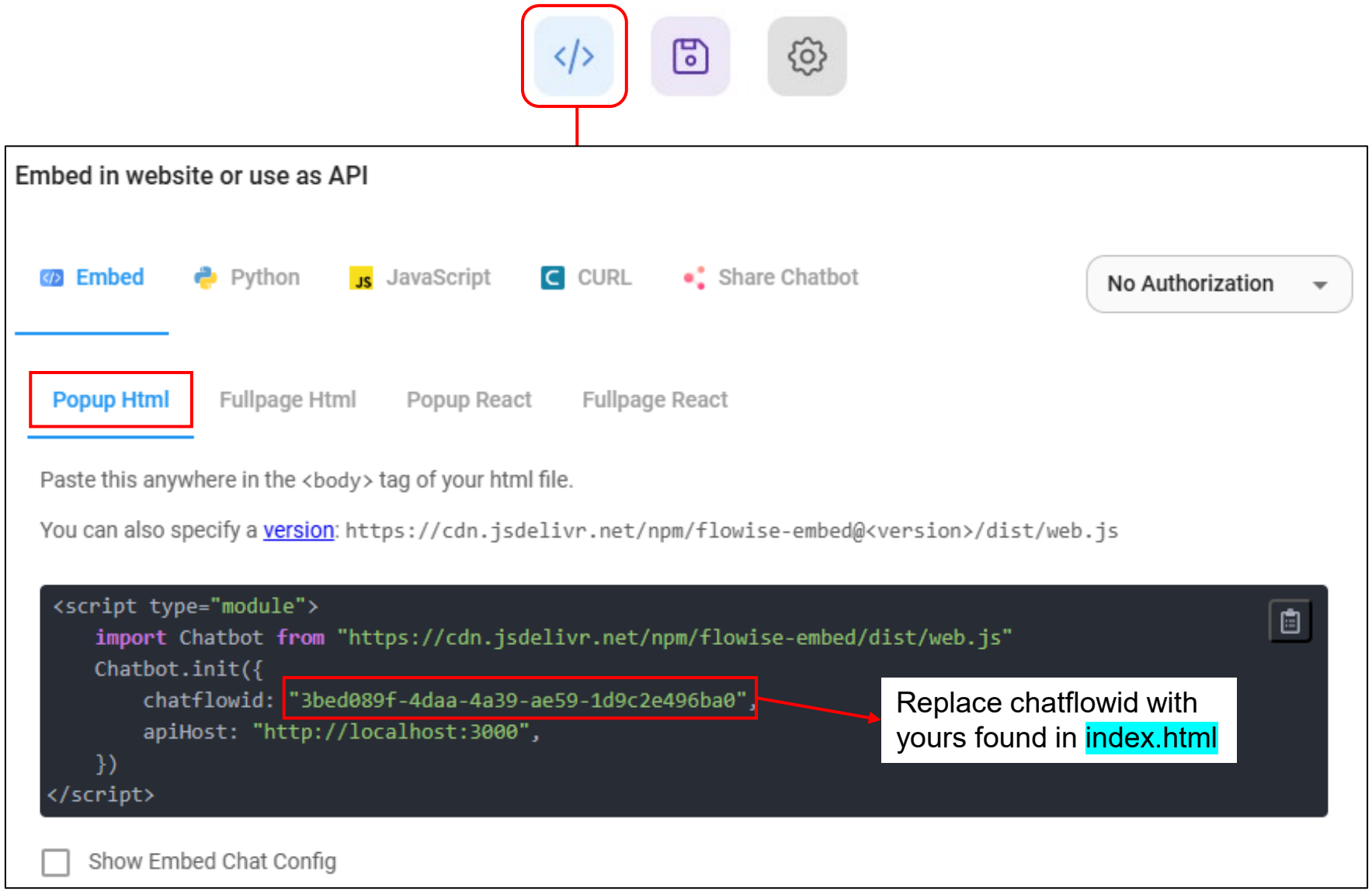
cURL Observation

```
C:\Users\Your_username>cd downloads

C:\Users\Your_username\Downloads>cd curl-8.11.0_4-win64-mingw

C:\Users\Your_username\Downloads\curl-8.11.0_4-win64-mingw>cd bin

C:\Users\Your_username\Downloads\curl-8.11.0_4-win64-mingw\bin>dir
 Volume in drive C has no label.
 Volume Serial Number is 2AA1-E26C

 Directory of C:\Users\Your_username\Downloads\curl-8.11.0_4-win64-mingw\bin

11/06/2024  07:09 AM    <DIR>          .
11/06/2024  07:09 AM    <DIR>          ..
11/26/2024  01:58 PM           236,849 curl-ca-bundle.crt
11/06/2024  07:09 AM         3,638,888 curl.exe
11/06/2024  07:09 AM             2,353 libcurl-x64.def
11/06/2024  07:09 AM         3,188,840 libcurl-x64.dll
               4 File(s)      7,066,930 bytes
               2 Dir(s)  116,778,516,480 bytes free

C:\Users\Your_username\Downloads\curl-8.11.0_4-win64-mingw\bin>curl
http://localhost:3000/api/v1/prediction/3bed089f-4daa-4a39-ae59-1d9c2e496ba0 -X POST -d "{\"question\": \"Hey,
how are you?\"}" -H "Content-Type: application/json"
{"text":"こんにちは！お元気ですか？何かお手伝いできることがありますか？Hello! How are you doing? How can I assist you
today?","question":"Hey, how are you?","chatId":"ca55aeb7-6f70-41bb-9370-
a710556bd0d2","chatMessageId":"04fc1199-90f2-4f49-95a1-
d40b95986039","isStreamValid":false,"sessionId":"ca55aeb7-6f70-41bb-9370-a710556bd0d2"}
C:\Users\Your_username\Downloads\curl-8.11.0_4-win64-mingw\bin>
```

API Endpoint (Embed)

- <embed> is a HTML element.
- Embeds external content at specified point in the HTML page.
- The content is provided by an external application or other source of interactive content such as a browser plug-in.
- Use NodeJS Express to demonstrate the working of Embed (Popup HTML).

API Endpoint (Embed)



API Endpoint (Embed)

1) Open a Command Prompt and navigate to the directory: node-v22.12.0-win-x64
2) Make directory: `mkdir projects\simpleHTTP`
3) Navigate to directory: cd projects\simpleHTTP
4) Install Express by:
   a) `..\..\npm init`

   (press “Enter” for all the questions and “yes” to complete the initialization)

   b) `..\..\npm install express -save`

   c) `..\..\npm fund`
5) Copy index.js, index.html and flowise.png to projects\simpleHTTP
6) Run Express: `..\..\node index.js`
7) Go to browser and enter URL: `http://localhost:5500`

Observation

```
C:\Users\Your_username\Downloads\node-v22.12.0-win-x64\projects\simpleHTTP>..\..\npm init
This utility will walk you through creating a package.json file.
It only covers the most common items, and tries to guess sensible defaults.

See `npm help init` for definitive documentation on these fields
and exactly what they do.

Use `npm install <pkg>` afterwards to install a package and
save it as a dependency in the package.json file.

Press ^C at any time to quit.
package name: (simplehttp)
version: (1.0.0)
description:
entry point: (index.js)
test command:
git repository:
keywords:
author:
license: (ISC)
About to write to C:\Users\Your_username\Downloads\node-v22.12.0-win-x64\projects\simpleHTTP\package.json:
```

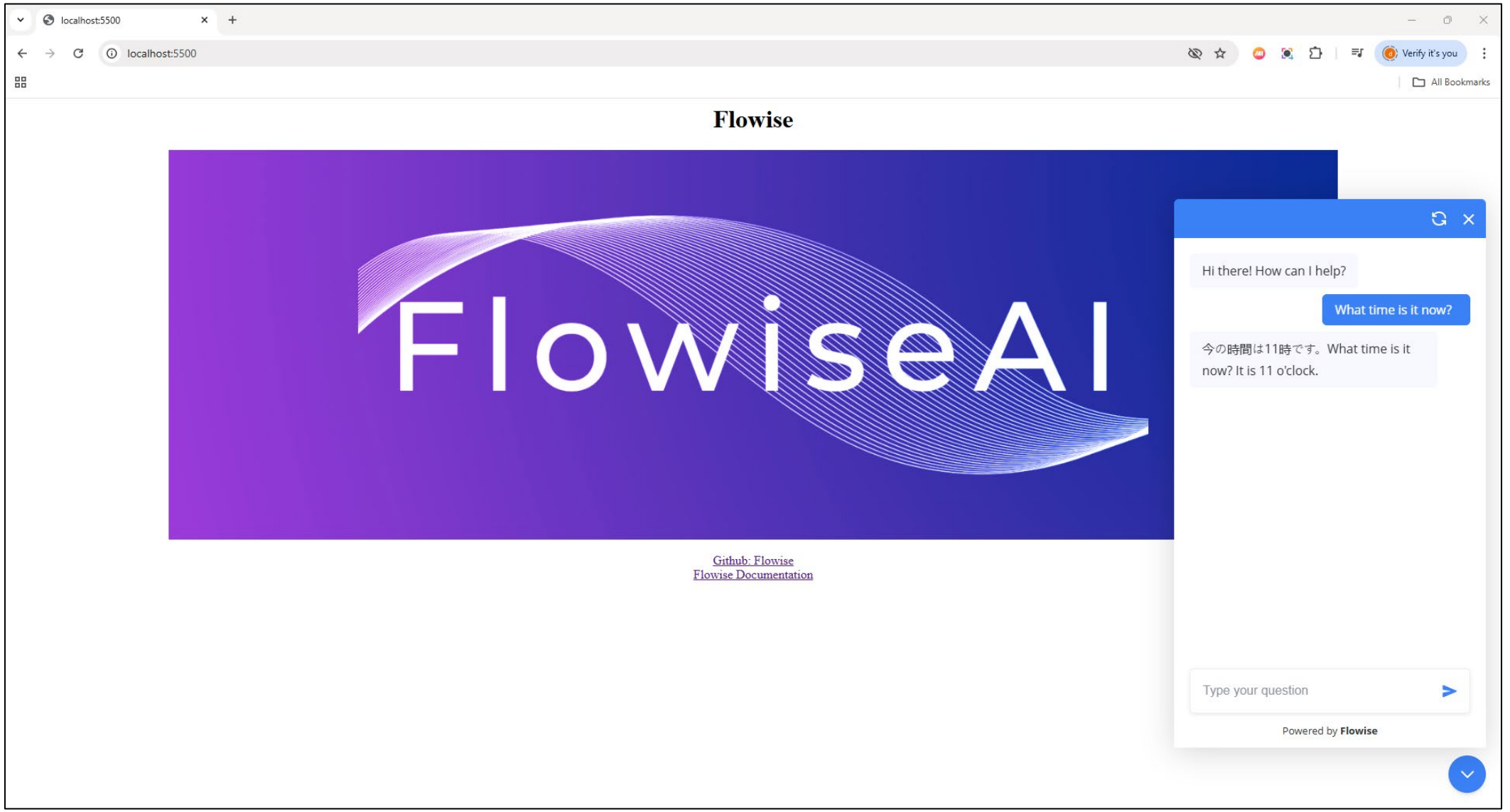
Observation

```
{
  "name": "simplehttp",
  "version": "1.0.0",
  "main": "index.js",
  "scripts": {
    "test": "echo \"Error: no test specified\" && exit 1"
  },
  "author": "",
  "license": "ISC",
  "description": ""
}



Is this OK? (yes) yes



C:\Users\Your_username\Downloads\node-v22.12.0-win-x64\projects\simpleHTTP>
```

Observation

```
C:\Users\koay_seng_tian\Downloads\node-v22.12.0-win-x64\projects\simpleHTTP>dir
 Volume in drive C has no label.
 Volume Serial Number is 2AA1-E26C

 Directory of C:\Users\koay_seng_tian\Downloads\node-v22.12.0-win-x64\projects\simpleHTTP

12/10/2024  11:22 AM    <DIR>          .
12/10/2024  11:09 AM    <DIR>          ..
04/07/2024  04:09 PM           536,083 flowise.png
04/07/2024  06:01 PM               764 index.html
04/07/2024  04:03 PM               302 index.js
12/10/2024  11:20 AM    <DIR>          node_modules
12/10/2024  11:20 AM            28,154 package-lock.json
12/10/2024  11:20 AM               256 package.json
               5 File(s)        565,559 bytes
               3 Dir(s)  117,105,750,016 bytes free

C:\Users\koay_seng_tian\Downloads\node-v22.12.0-win-x64\projects\simpleHTTP>
```

Result



Reference

- Flowise
  https://docs.flowiseai.com/

Quiz 1

- https://forms.office.com/r/S9AUdfYA8r

Thank you!