

## Lab: Create a simple AI-integrated workflow for generating code comments or debugging

This lab guide will walk you through creating a simple AI workflow using Langflow to generate helpful code comments or debug suggestions. Langflow is a tool that helps you build, visualize, and automate pipelines for Large Language Model (LLM) tasks.

### Lab Objective

By the end of this lab, you will:

1. Understand how to create a new workflow in Langflow.
2. Integrate an AI LLM node to receive code snippets and produce code comments or debugging tips.
3. Test and refine the prompt and flow for real-time debugging or code commenting use.

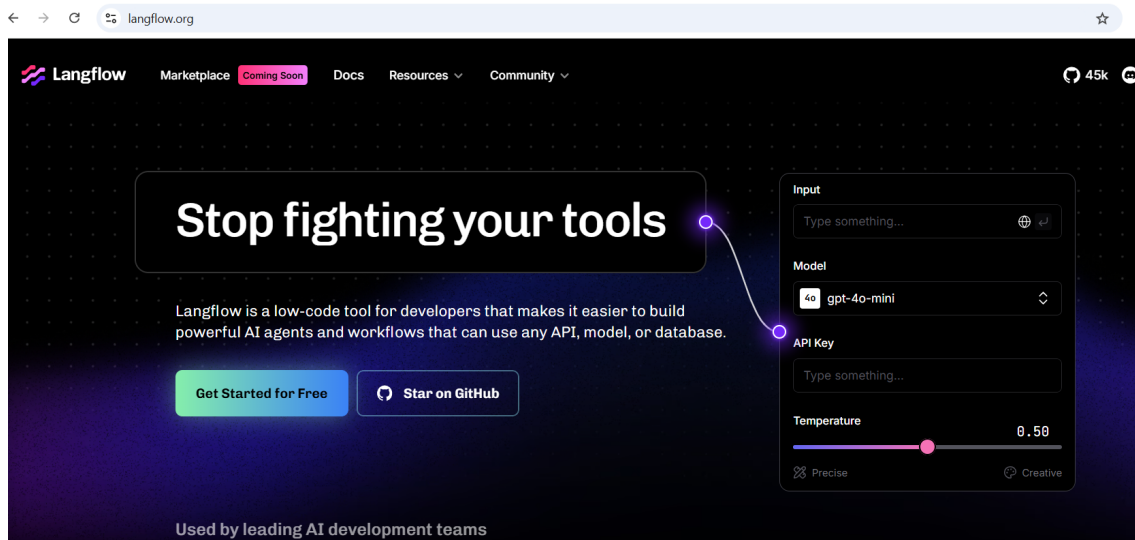
### Part 1: Account Setup and Getting Started

#### Step 1: Access LangFlow


1. Open your web browser and navigate to [LangFlow](https://langflow.org).
2. Click on the **Sign Up** button in the top-right corner of the homepage.


#### Step 2: Create an Account

1. Fill in the required details or Signup using other options.
2. Click the **Sign Up** button.



### Sign Up for Free

 Sign Up with GitHub

 Sign Up with Google

OR

First Name

Last Name

Company Email

☐ I agree to DataStax's [Privacy Notice](#), [MSA](#) and [Terms of Service](#)

### Building AI Apps Just got 100x Easier

#### Visual development for LLM and LangChain-based applications

Drag-and-drop development of AI apps by connecting prebuilt, customizable components into data flows. Instantly test and iterate. Start in the cloud or use open source.

#### The Fastest way to Create and Share Powerful AI apps

Create powerful chatbots, agents, and RAG (retrieval augmented generation) apps in minutes, not months with a low-code, Python-based framework.

#### Prebuilt components for any Data source, database or API

Connect to any AI model, API, or database with hundreds of components. Start

### Step 3: Verify Your Email (If Required)

1. Check your inbox for a verification email from LangFlow.
2. Click on the verification link to activate your account.

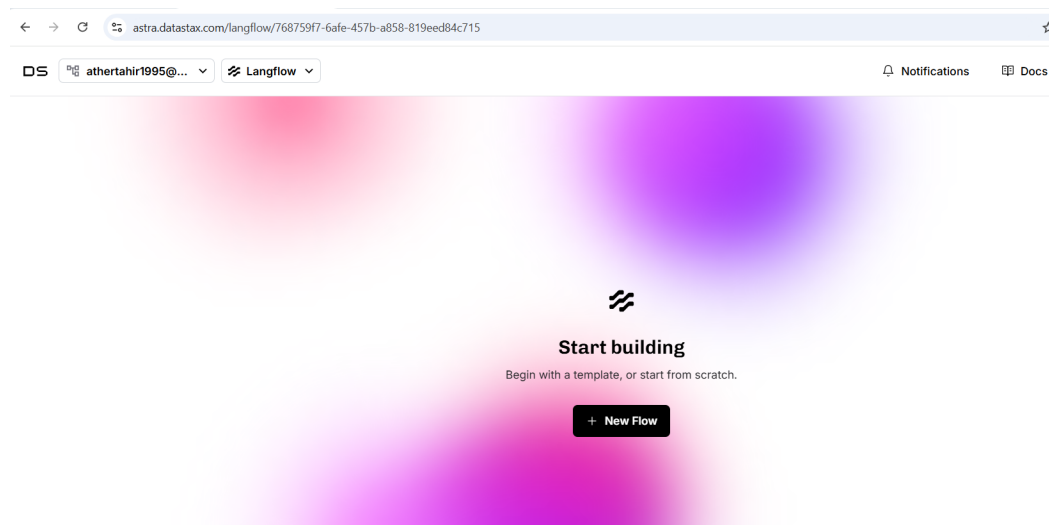
## Use Case : Coding Assistant

### Step 1: Log In

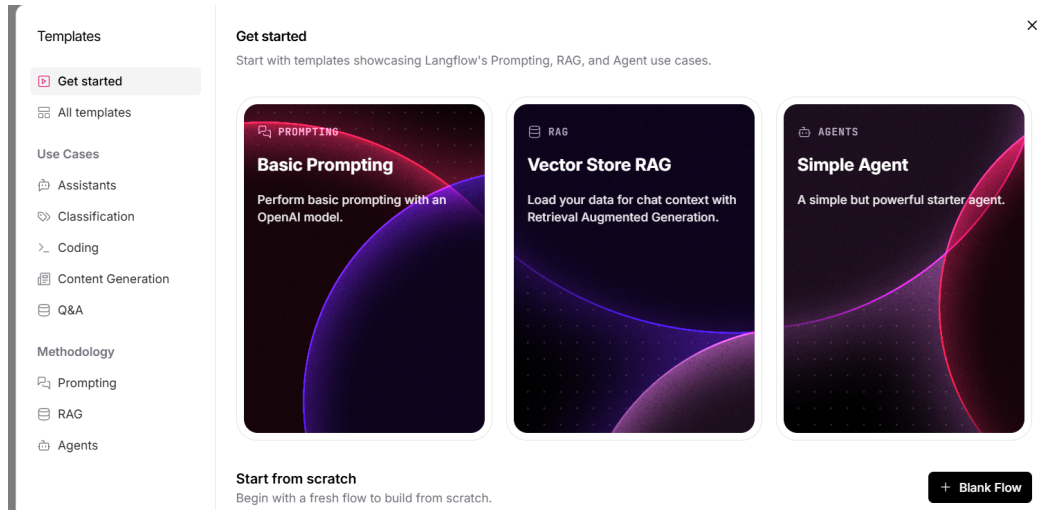
1. Return to [LangFlow](#) and **Log In**.

### Step 2: Create a New Flow

1. Log in to LangFlow.
2. On the dashboard, click **New Flow**.

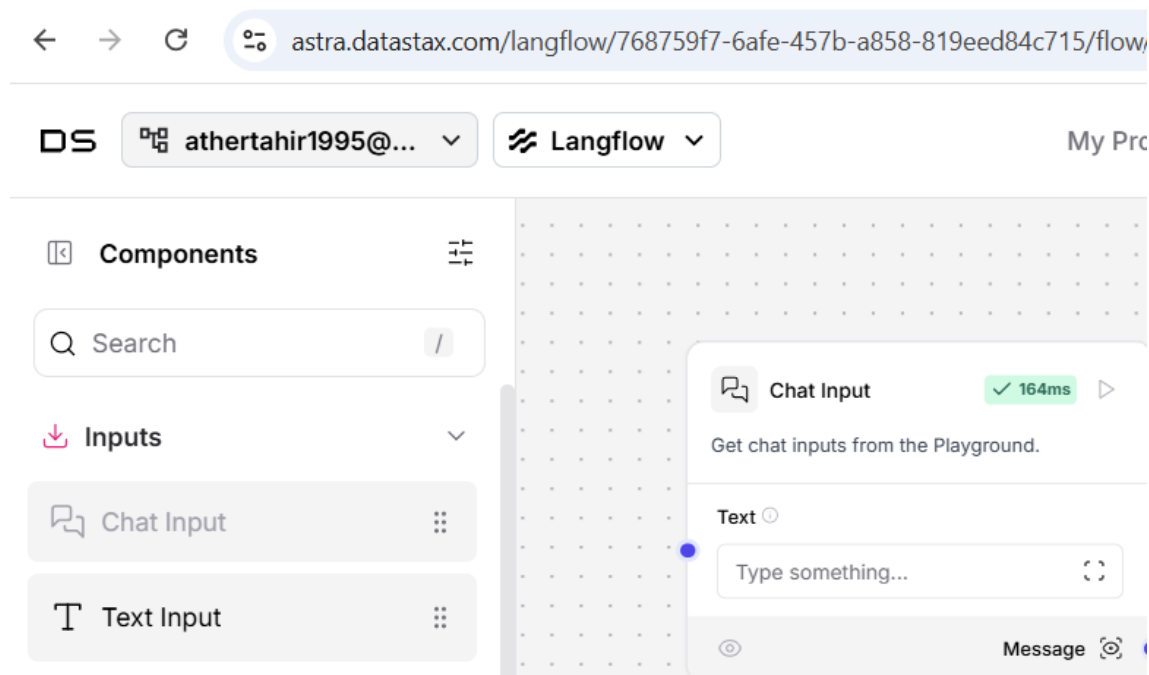


3. Now, click **Blank Flow**.



## Step 3: Add a Chat Input Node

Drag a **Chat Input** node from the **Inputs** section to the canvas.

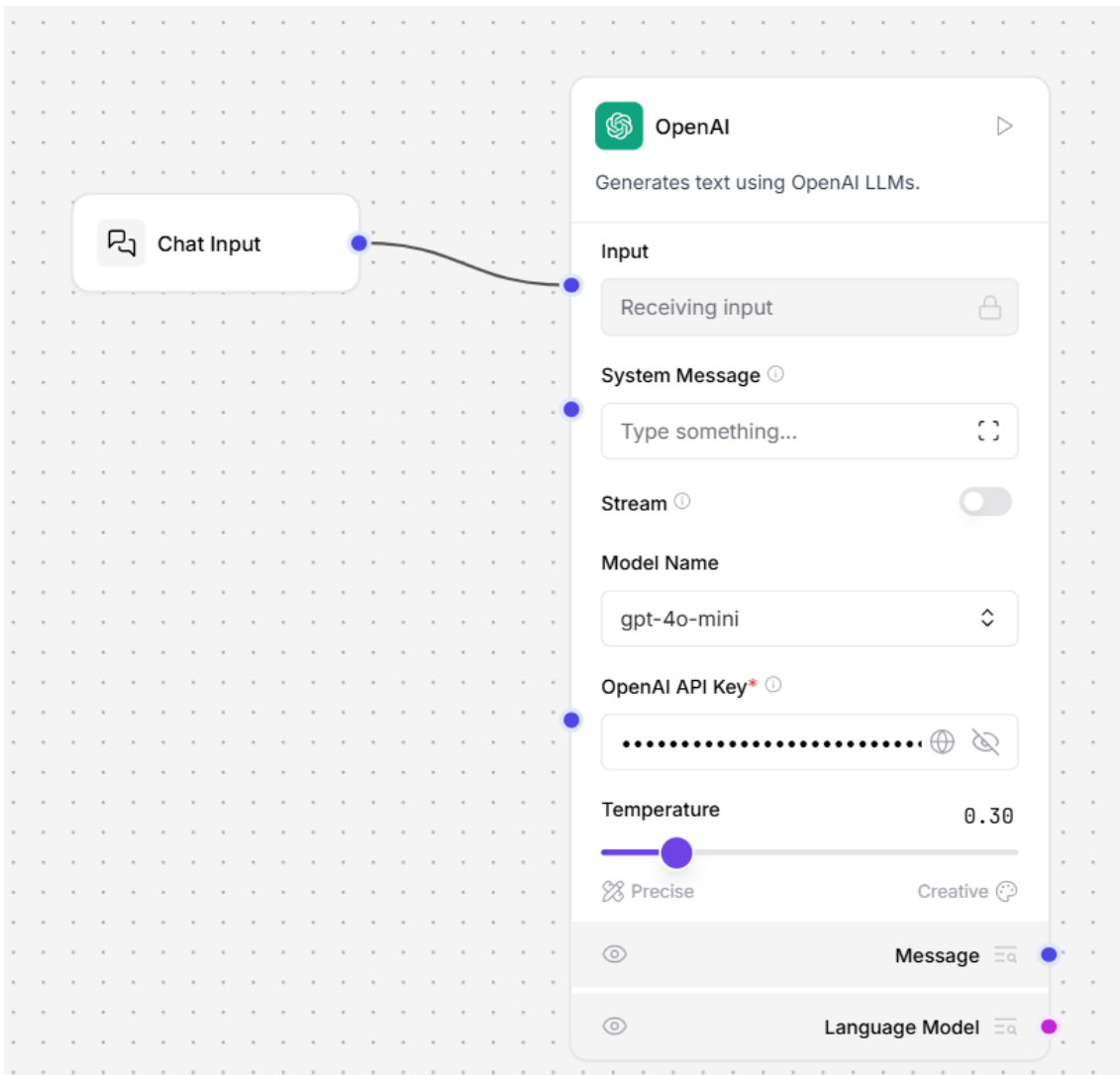


## Step 4: Add OpenAI Node

1. On the left panel, search for the **OpenAI**.
2. Drag an **OpenAI** node onto the canvas.
3. In the node's settings, configure the following:
  - **Model**: keep the default model or you can choose a different model.
  - **API Key**: Provide your API key.

- **Temperature:** Set an appropriate value (e.g., 0.3) to keep the responses somewhat focused.

4. Link **Chat Input** with **Input**:



## Step 5: Add a Prompt Template Node

1. Find the **Prompt Template** node in the **Prompts** section.
2. Drag the **Prompt Template** node onto the canvas.
3. In this node's settings:
  - **Prompt:** Provide a template that indicates the desired output. For instance:

```
You are an AI code reviewer. Below is a code snippet:
{code_snippet}

Task:
1. Generate meaningful comments that explain the functionality.
2. Identify potential bugs or logical errors and provide debugging
```

suggestions.

Output Format:

- Comments: <Your code comments>
- Debug Suggestions: <Your debugging tips>

- **Input Variables:** Set the variable name to `code_snippet` so it can dynamically receive code.

#### Edit Prompt

Create your prompt. Prompts can help guide the behavior of a Language Model. Use curly brackets {} to introduce variables.

You are an AI code reviewer. Below is a code snippet:

`{code_snippet}`

Task:

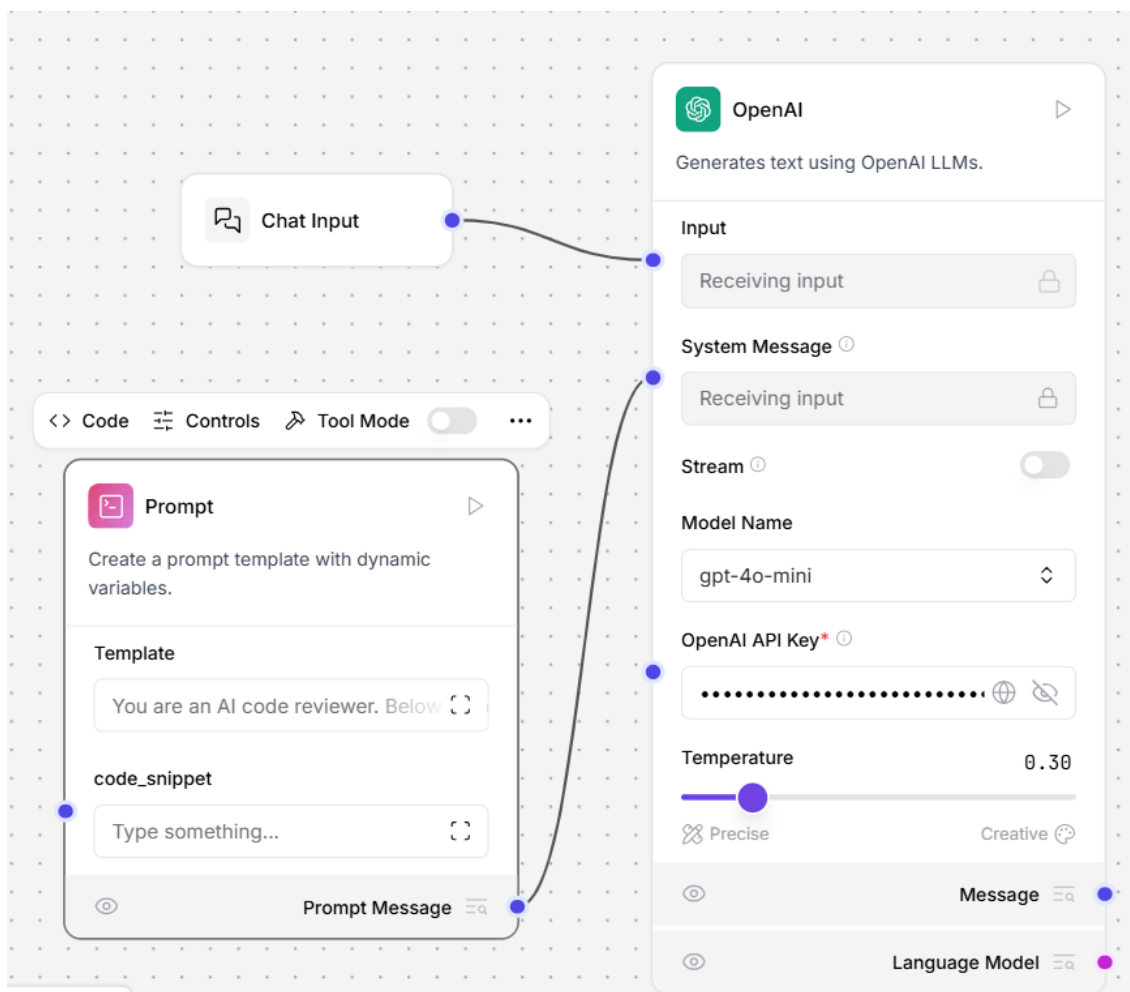
1. Generate meaningful comments that explain the functionality.
2. Identify potential bugs or logical errors and provide debugging suggestions.

Output Format:

- Comments: <Your code comments>
- Debug Suggestions: <Your debugging tips>

**{}** Prompt Variables: `code_snippet`

Prompt variables can be created with any chosen name inside curly brackets, e.g. {variable\_name}



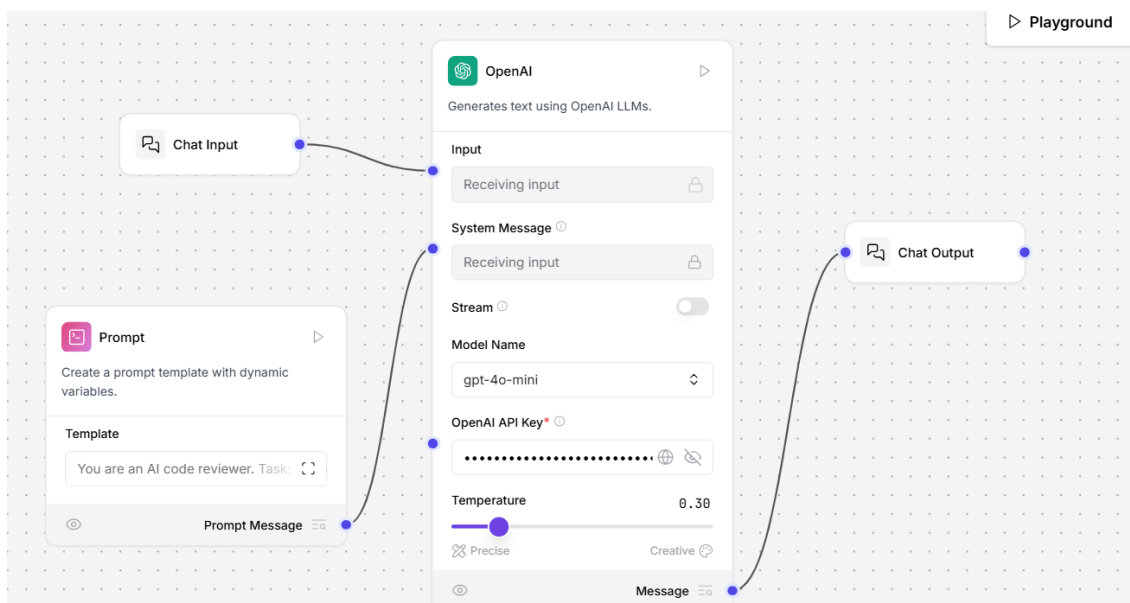
## Step 6: Connect Nodes

1. Make sure to connect the **Prompt** node's output to the **OpenAI** node's input.
2. This ensures that the final prompt from the template will be processed by the model.

This setup will let you paste code directly into Langflow for analysis.

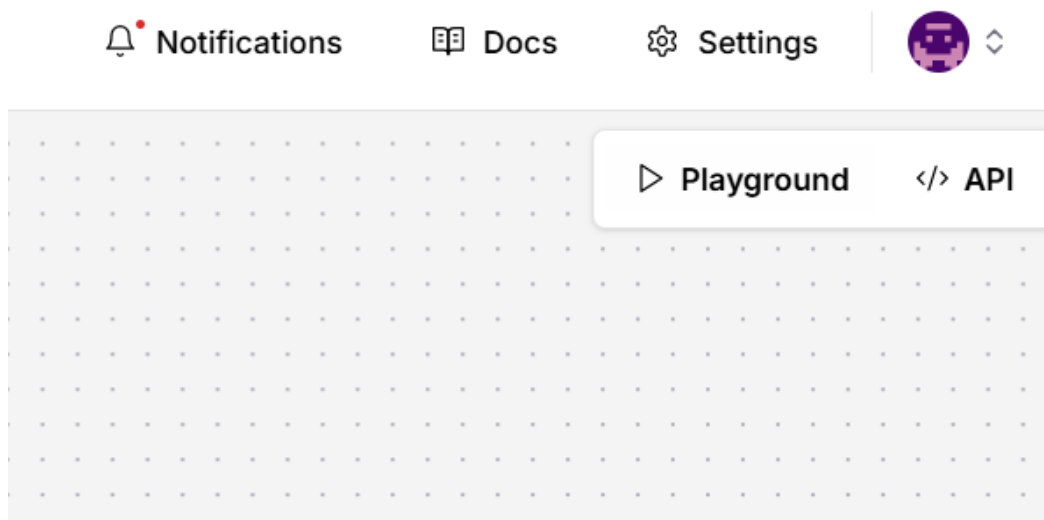
## Step 7: Add an Output Display Node

1. Drag an **Chat Output** node from the **Outputs** section.
2. Connect the **OpenAI** node to this output node.
3. This node will display the AI-generated comments and debug suggestions in an easy-to-read format.



## Step 8: Run the Flow

1. Once everything is connected, press **Playground** button in Langflow:




2. In the text input field for code snippet, paste some sample code. For example:


```
def add_numbers(a, b):  
    c = a + b  
    return c
```

3. The output node should display the AI-generated comments and debug suggestions.

Session Feb 11, 19:00:02



**User**  
def add\_numbers(a, b):  
 c = a + b  
 return c



**AI** gpt-4o-mini

- Comments:

python

```
# This function takes two arguments, a and b, which are expected to be numbers (integers).  
# It calculates the sum of these two numbers and stores the result in variable c.  
# Finally, it returns the value of c, which is the sum of a and b.
```
- Debug Suggestions:

python

```
# Ensure that the inputs a and b are of compatible types (e.g., both should be numbers).  
# You might want to add type checking to raise an error if the inputs are not numbers.
```

## Step 9: Refine the Prompt and Settings

1. Adjust the temperature in the LLM node if the suggestions are too varied or not varied enough.
2. Modify the prompt template to change the output format or add more detail.
3. If you find the AI incorrectly identifies bugs or provides irrelevant comments, add clarifying instructions to the prompt.

### Task

Enter different code snippets from the previous labs and analyze the output.

### Bonus Tasks

#### Use Case 1: Health Care Staffing Invoice Generator

##### Objective:

Create a flow to:

- Generate invoices for clients.
- Calculate recruiter commissions.
- Summarize placement data.

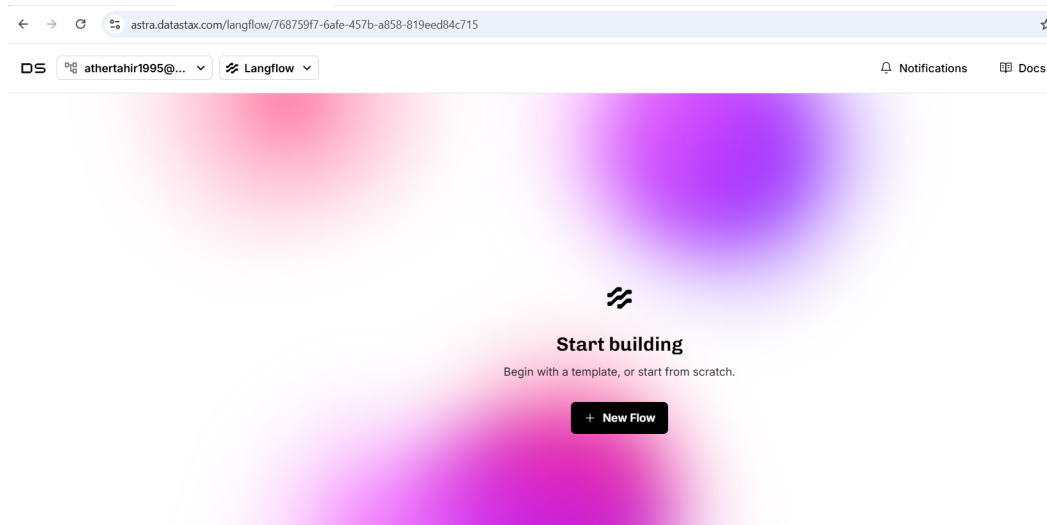
##### Steps

###### Step 1: Create a New Flow

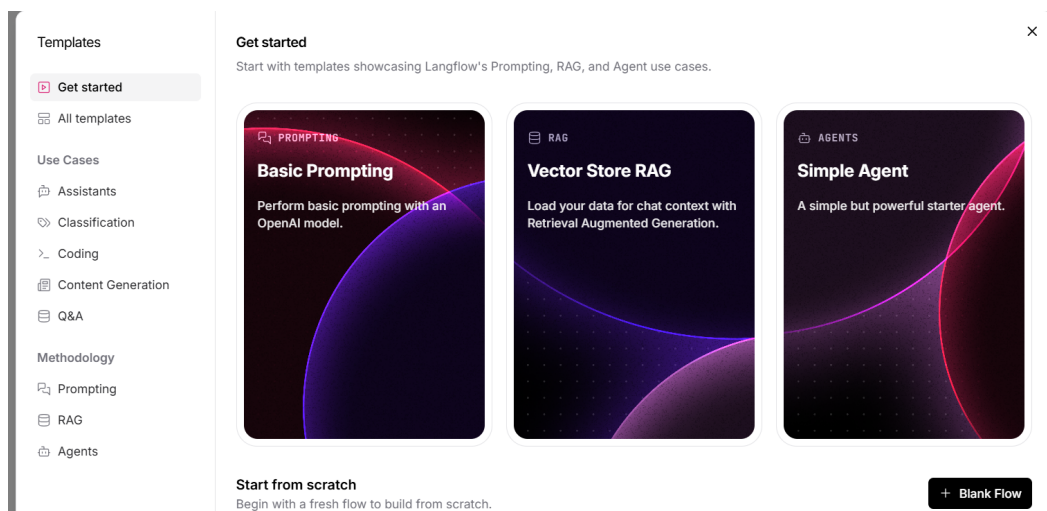
1. Log in to LangFlow.



2. On the dashboard, click **New Flow**.

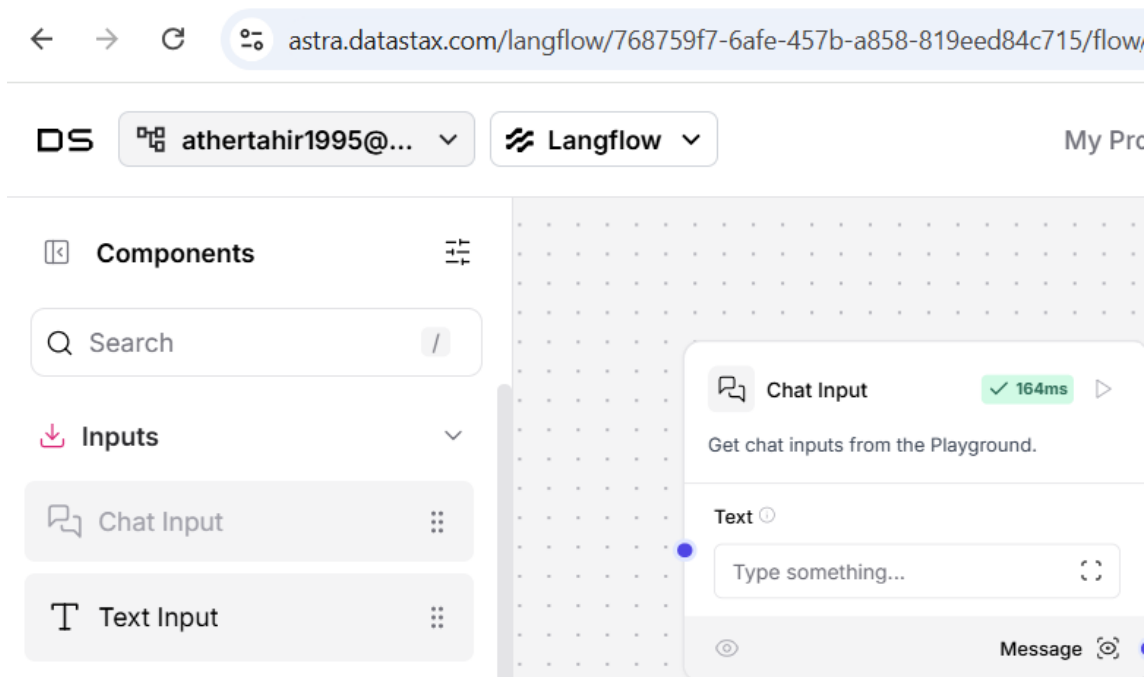


3. Now, click **Blank Flow**.



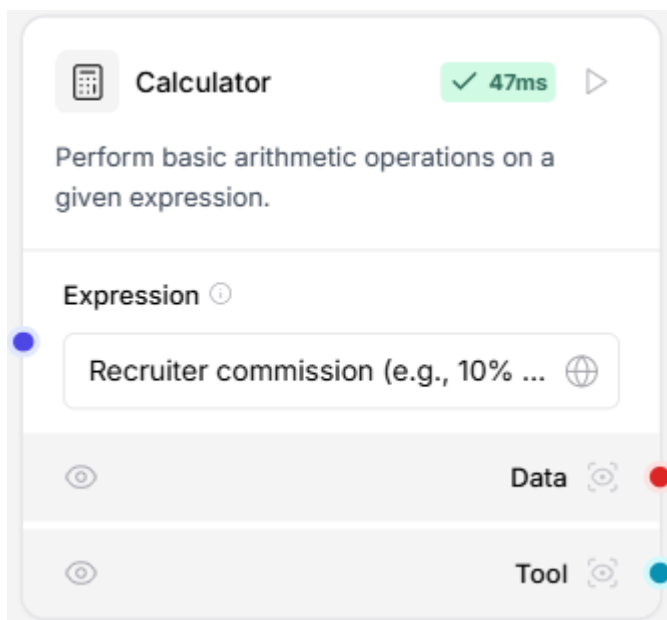
## Step 2: Add an Input Node

1. Drag and drop the **Input** node onto the canvas.
2. Select **Chat Input**.



### Step 3: Add a Calculation Node

1. Drag the **Calculation** node to the canvas.
2. Enter Expression: `Recruiter commission (e.g., 10% of placement cost)`.

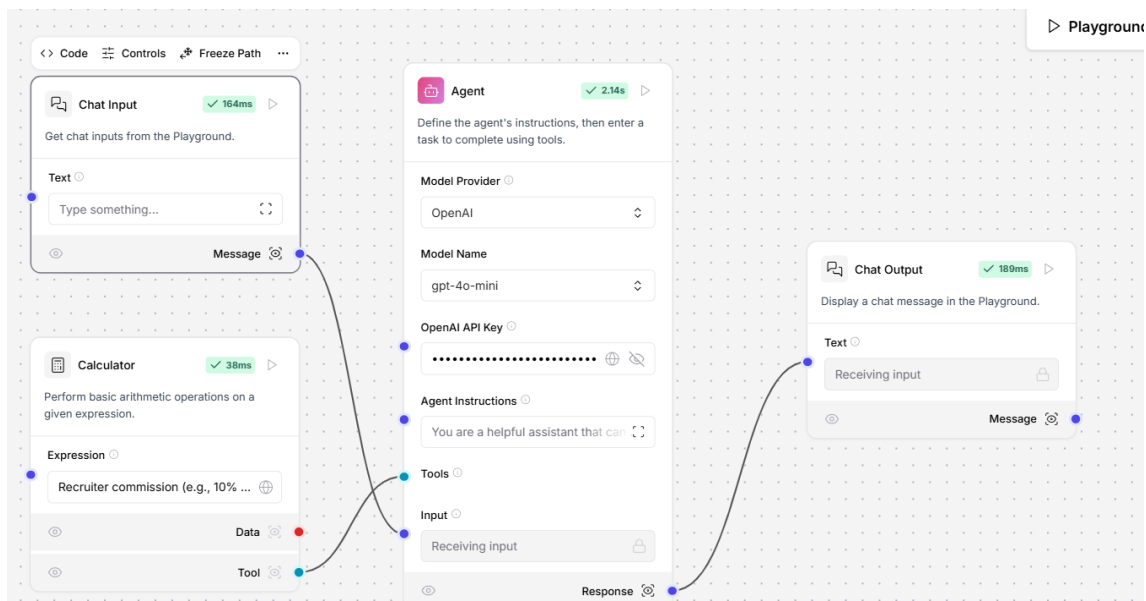


### Step 4: Add an Agent Node

1. Drag the **Agent** node onto the canvas.
2. Connect it to the Calculation node and Input node as show below.
3. Enter `OpenAI` key.

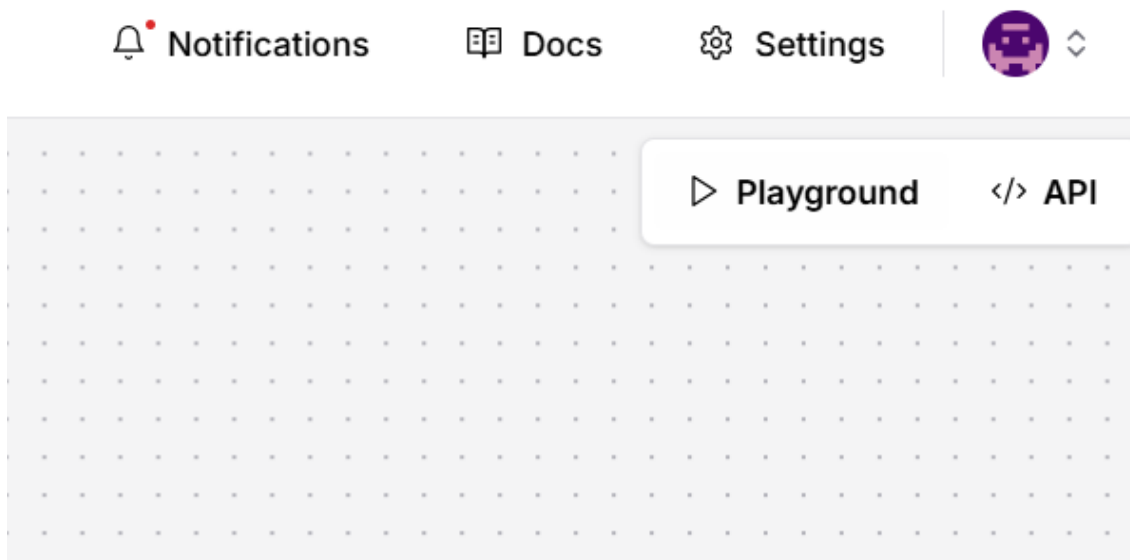
### Step 5: Add an Output Node

1. Drag the **Chat Output** node onto the canvas.
2. Connect it to the `Response` part of `Agent` node.



#### Step 6: Test the Flow

1. Click Playground button:



2. Enter sample data in the playground:

```
Client: ABC Hospital
Staff placed: 5
Placement cost: $20,000

Give me Recruiter commission (e.g., 10% of placement cost)
```

3. Run the flow and review the generated invoice.

Playground

Chat +

Default Session ...

Default Session

The recruiter commission, calculated at 10% of the placement cost of \$10,000, is \$1,000.

User

Recruiter commission (e.g., 10% of placement cost).

Client: ABC Hospital

Staff placed: 5

Placement cost: \$10,000

AI gpt-4o-mini

Finished

✓ 1.4s

The recruiter commission for ABC Hospital, based on a placement cost of \$10,000 at a rate of 10%, is \$1,000.

Send a message...

2. Enter new data in the playground to generate invoice:

```
Client: XYZ Hospital

Nurses: 12
Doctors : 5
Radiologist: 3

Placement cost: $130,000

Generate an text invoice for above hospital staffing quotes in details. Add 25%
misc charges and 1340$ Tax
```

..

3. Run the flow and review the generated invoice.



User

Client: XYZ Hospital

Nurses: 12

Doctors : 5

Radiologist: 3

Placement cost: \$130,000

Generate an text invoice for above hospital staffing quotes in details. Add 25% misc charges and 1340\$ Tax



AI gpt-4o-mini

Finished

✓ 4.8s ▼

Here is the detailed text invoice for XYZ Hospital staffing quotes:



AI gpt-4o-mini

Finished

✓ 4.8s ▼

Here is the detailed text invoice for XYZ Hospital staffing quotes:

Invoice

Date: January 28, 2025

Client: XYZ Hospital

Staffing Details:

- Nurses: 12
- Doctors: 5

Placement Cost: \$130,000

Additional Charges:

- **Miscellaneous Charges (25%):** \$32,500
- **Tax:** \$1,340

Total Amount Due:

- **Total:** \$163,840

### Task: Explore the Flow

Explore the flow by giving different prompts and bigger calculations.

## Bonus Task: Canadian Federal Government Document Summarizer

### Objective:

Create a flow to:

- Summarize and analyze large government documents.

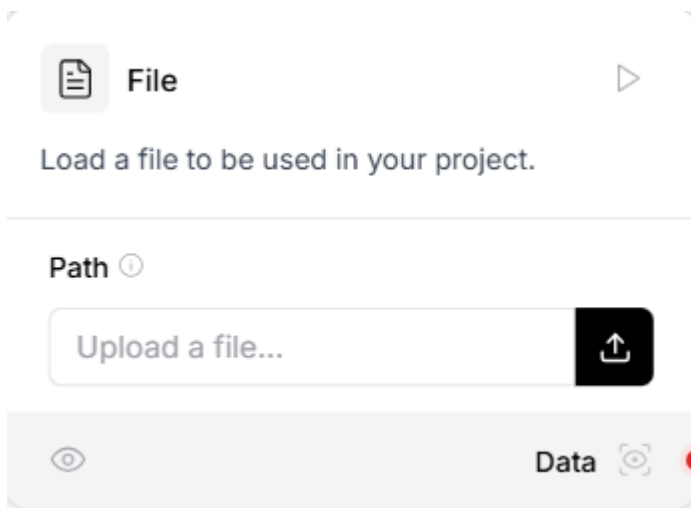
### Steps

#### Step 1: Create a New Flow

1. Log in to LangFlow.
2. Click **New Flow** on the dashboard.

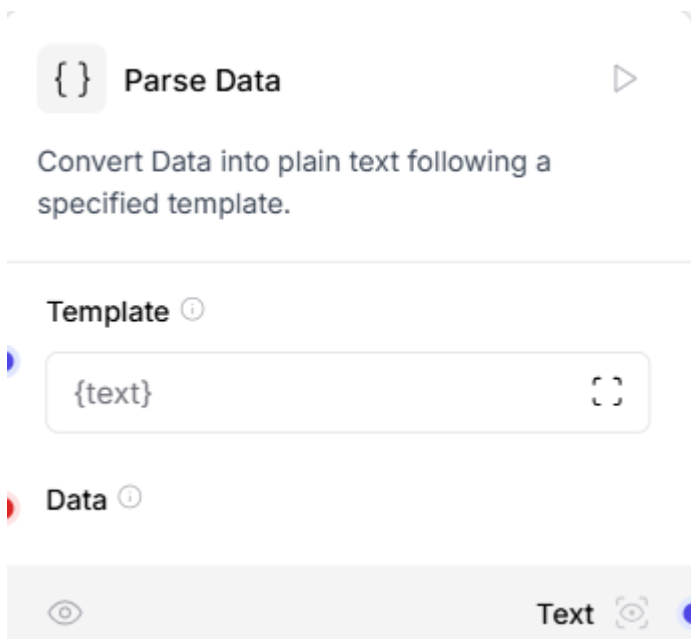
#### Step 2: Add File Node

1. Drag and drop the **File** node onto the canvas.
2. Configure it to upload:
  - Government policy document `canada_visa_requirements.pdf` from the GitHub repo.



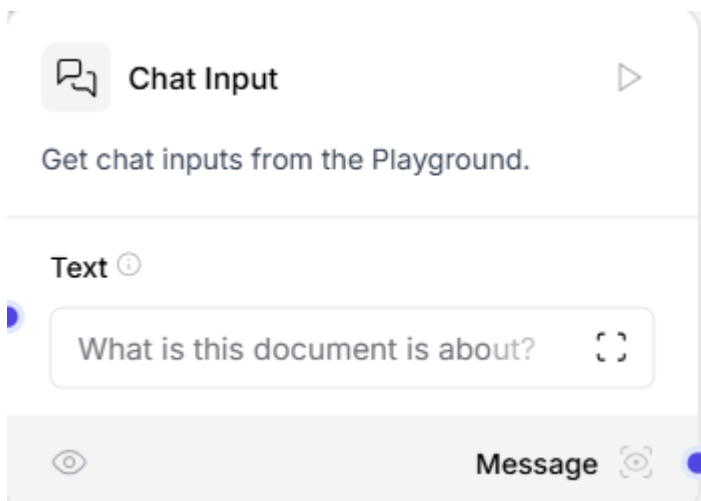
### Step 3: Add Parse Data Node

1. Drag and drop the **Parse Data** node onto the canvas.
2. Set **Template** to `{text}`.



### Step 4: Add Chat Input Node

1. Drag and drop the **Chat Input** node onto the canvas.
2. Set **Text** to `What is this document is about?`.

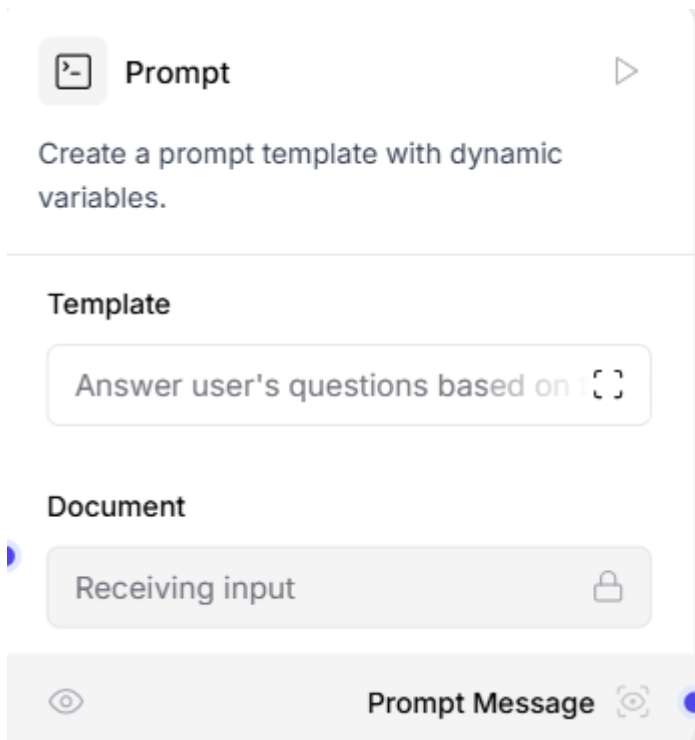


#### Step 5: Add Prompt Node

1. Drag and drop the **Prompt** node onto the canvas.
2. Set **Template** to the following:



```
Answer user's questions based on the document below:  
  
---  
  
{Document}  
  
---  
  
Question:
```





#### Step 6: Add OpenAI Node


1. Drag the **OpenAI** node onto the canvas.
2. Enter `OpenAI API Key` key.

 **OpenAI** 


Generates text using OpenAI LLMs.


---

**Input**


Receiving input 

**System Message** ⓘ



Receiving input 

**Stream** ⓘ 



**Model Name**



gpt-4o-mini 



**OpenAI API Key** ⓘ

Type something...  

**Temperature**

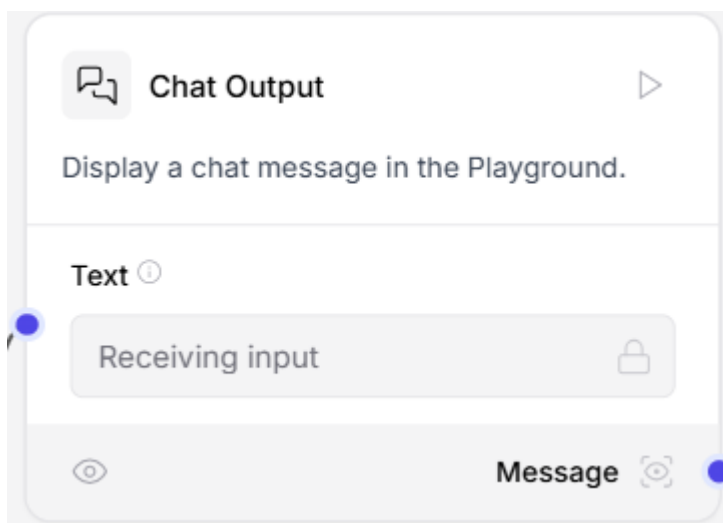
0.1  

 **Text** 

 **Language Model** 

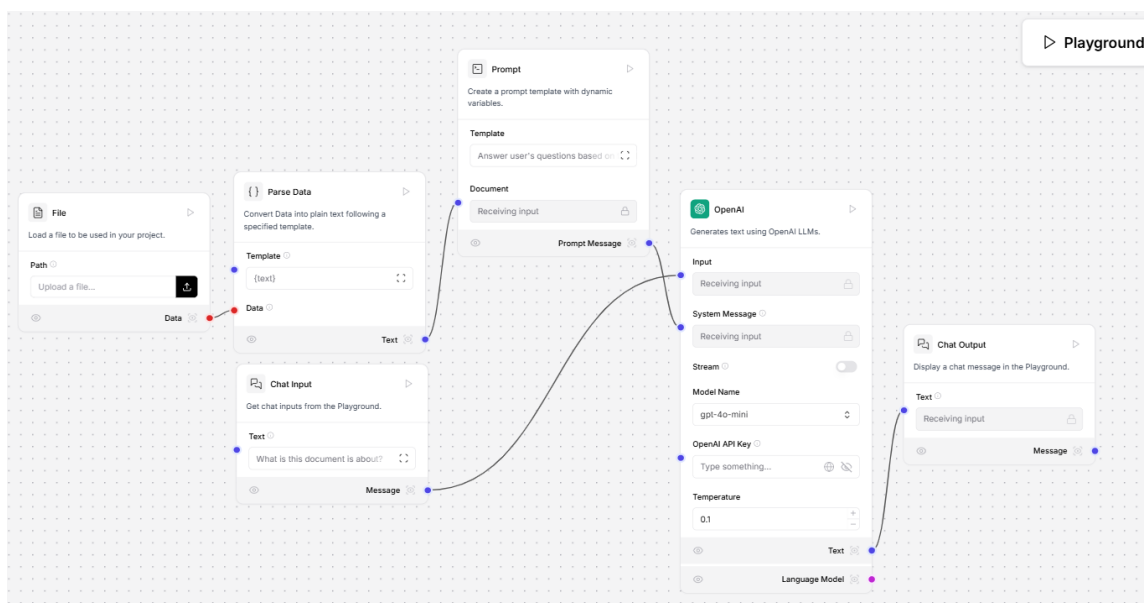
### Step 7: Add Chat Output Node

1. Drag and drop the **Chat Output** node onto the canvas.



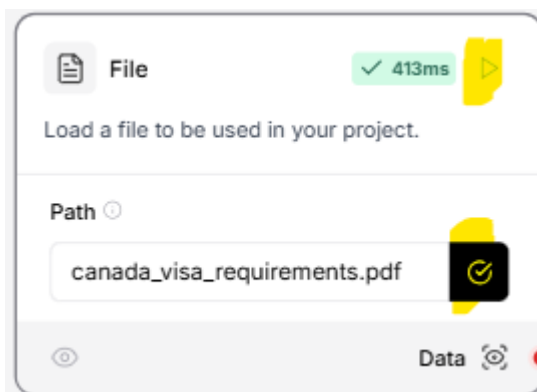
### Step 8: Connect all nodes as shown below:

Connect all the nodes as shown below:

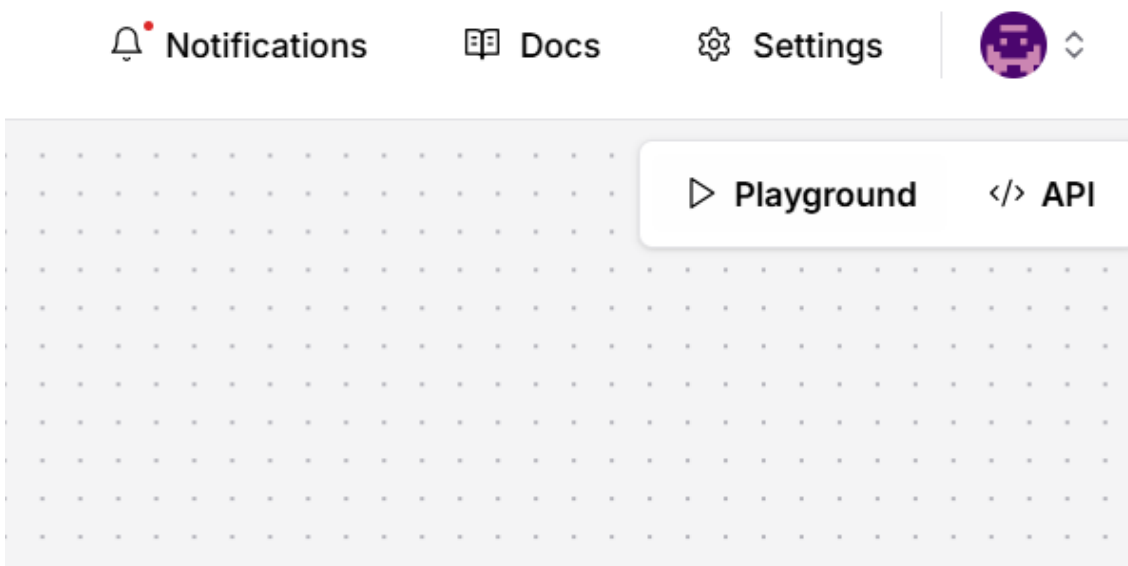


### Step 8: Test the Flow

1. Upload file `canada_visa_requirements.pdf` and click **Run** icon:



2. Click Playground button:



3. Enter sample data in the playground:

- What is this document is about?
- Do people from United States need to apply for Visa?
- Do people from SouthAfrica need to apply for Visa?
- What is the requirement for Workers and students visa?



**User**

what is this document about?



**AI** gpt-4o-mini

The document provides information about the entry requirements for visiting Canada based on the traveler's country or territory of origin. It outlines the necessary documents for various categories of travelers, including Canadian citizens, permanent residents, U.S. citizens, lawful permanent residents of the U.S., visa-exempt travelers, and visa-required travelers. It also discusses specific requirements for workers and students, as well as options for parents and grandparents visiting their children or grandchildren in Canada. Additionally, it includes details about the Electronic Travel Authorization (eTA) and biometric screening requirements.



**User**

What is the requirement for Workers and students visa?



**AI** gpt-4o-mini

If you're a worker or student, you must meet Canada's entry requirements. A work permit or study permit is not a visa. In most cases, you'll also need a valid visitor visa or an Electronic Travel Authorization (eTA) to enter Canada.

When applying for your first study or work permit, if you need a visa or eTA, it will be automatically issued to you upon approval of your application. When traveling to Canada, you must have:

- Your letter of introduction
- A valid passport or travel document
- If you're visa-required, your passport must contain the visa sticker issued by Canada
- If you need an eTA and you're flying to a Canadian airport, you must travel with the passport that is electronically linked to your eTA.

If you already have a work or study permit, ensure that your visitor visa is still valid if you plan to leave Canada and re-enter. If you need an eTA, travel with the passport that is electronically linked to your eTA,

Send a message...



**User**

Do people from United States need to apply for Visa?



**AI** gpt-4o-mini

No, U.S. citizens do not need to apply for a visa to visit Canada. They must carry proper identification, such as a valid U.S. passport.



**User**

Do people from SouthAfrica need to apply for Visa?



**AI** gpt-4o-mini

Yes, travellers from South Africa need to apply for a visa to come to Canada by any method of travel.