



Skills
Network

LangChain Chains and Agents for Building Applications

IBM

LangChain Chains and Agents for Building Applications

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What you will learn



Describe LangChain's chains for response generation

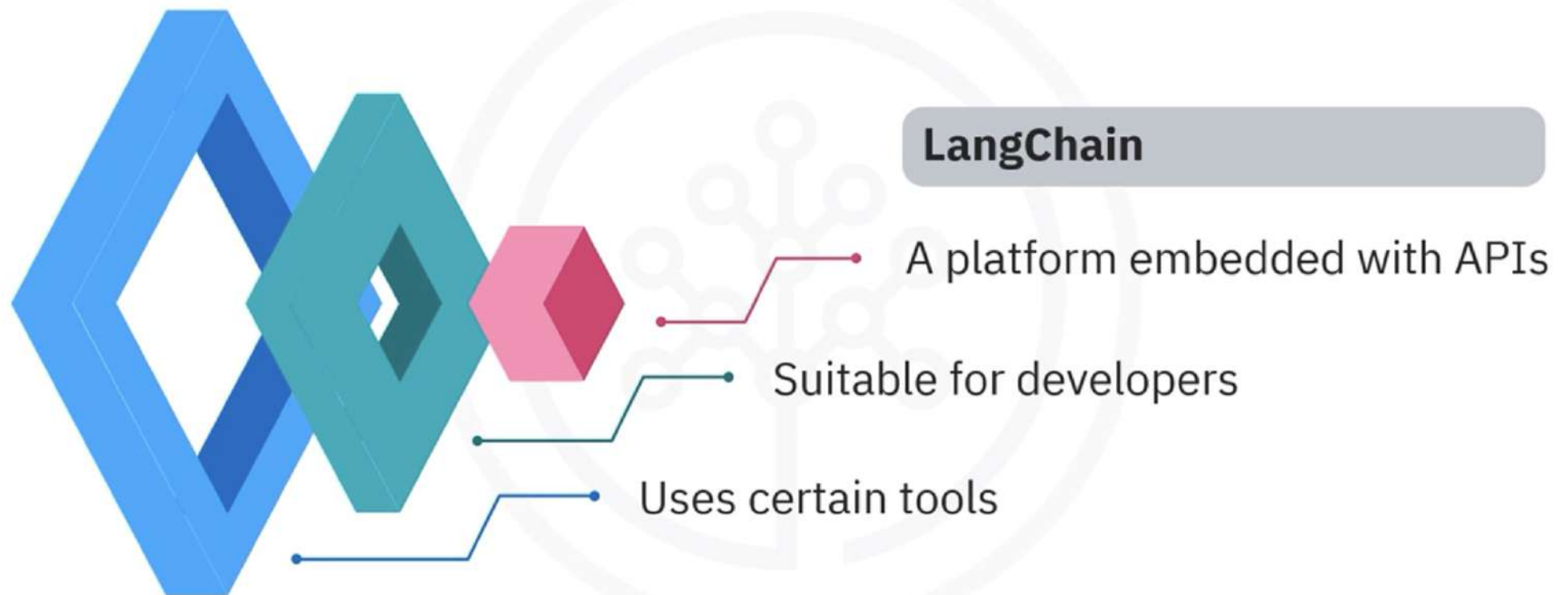


Describe memory storage in LangChain



Define agents in LangChain

Introduction

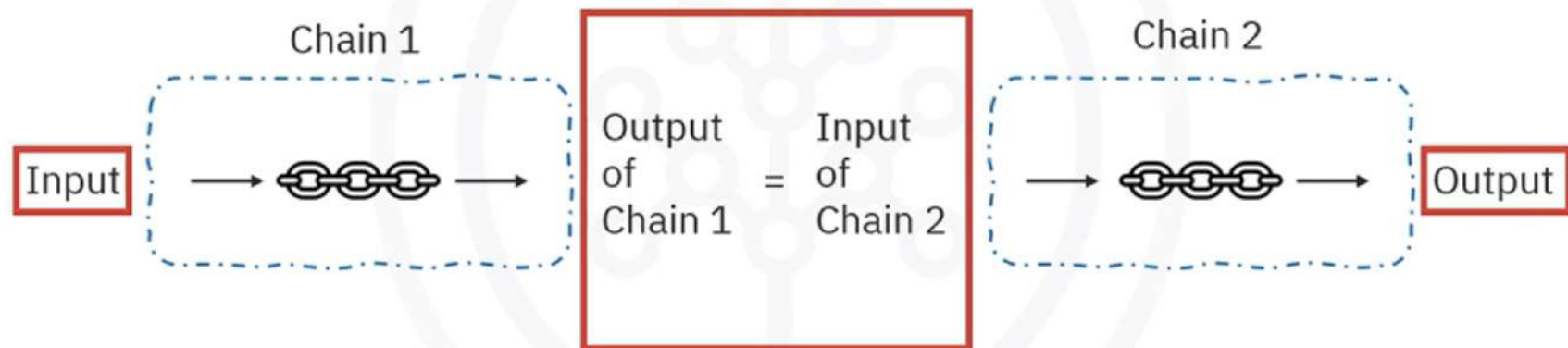


Chains

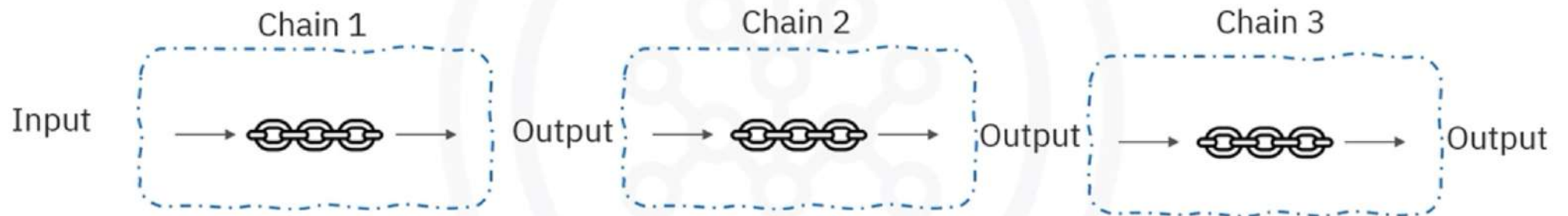


Chains

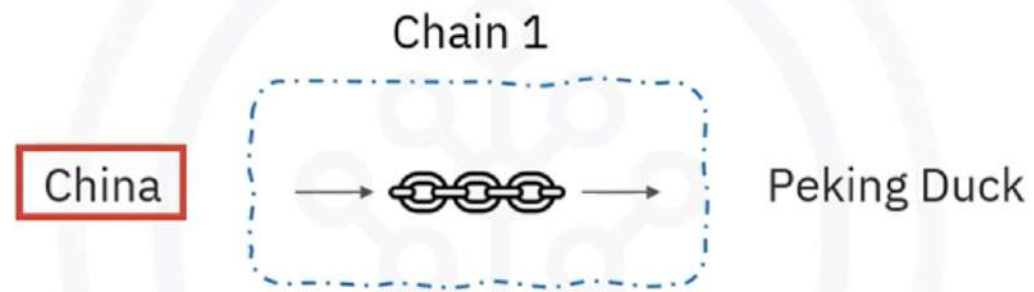
Refer to sequences of calls, whether to an LLM, a tool, or a data preprocessing step



Chains



Chains



Chains

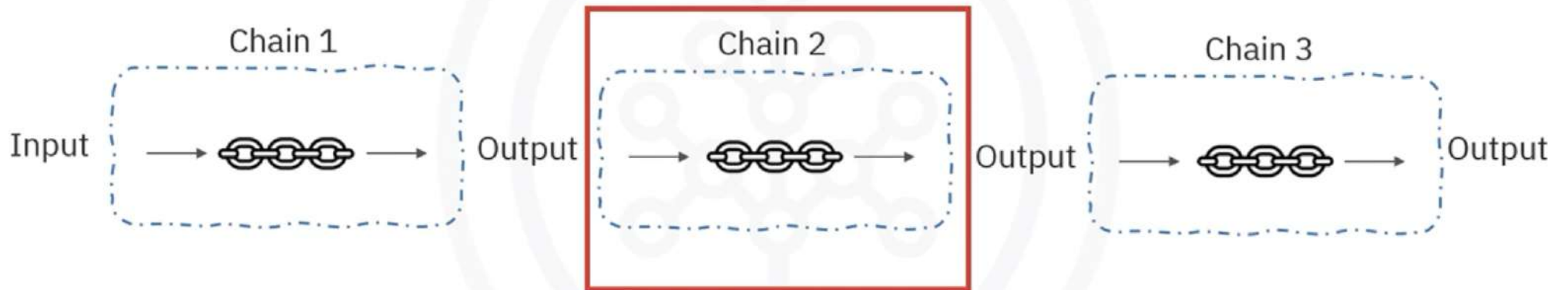
```
from langchain.chains import LLMChain, SequentialChain

template = """Your job is to come up with a classic dish from the
    area that the users suggests.
    {location}
    YOUR RESPONSE:
    """

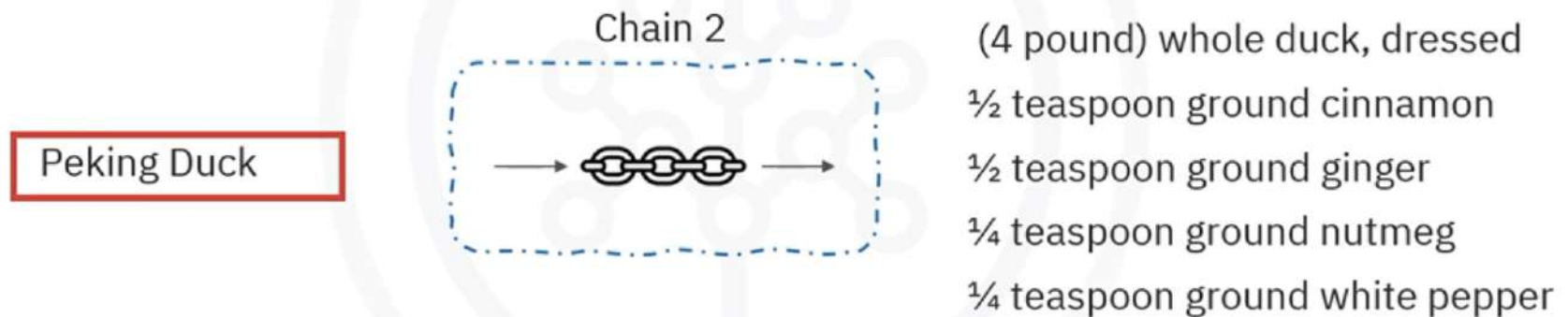
prompt_template = PromptTemplate(template=template,
    input_variables=['location'])

# chain 1
location_chain = LLMChain(llm=mixtral_llm, prompt=prompt_template,
    output_key='meal')
```

Chains



Chains



Chains

```
template = """Given a meal {meal}, give a short and simple recipe on how  
to make that dish at home.
```

```
YOUR RESPONSE:
```

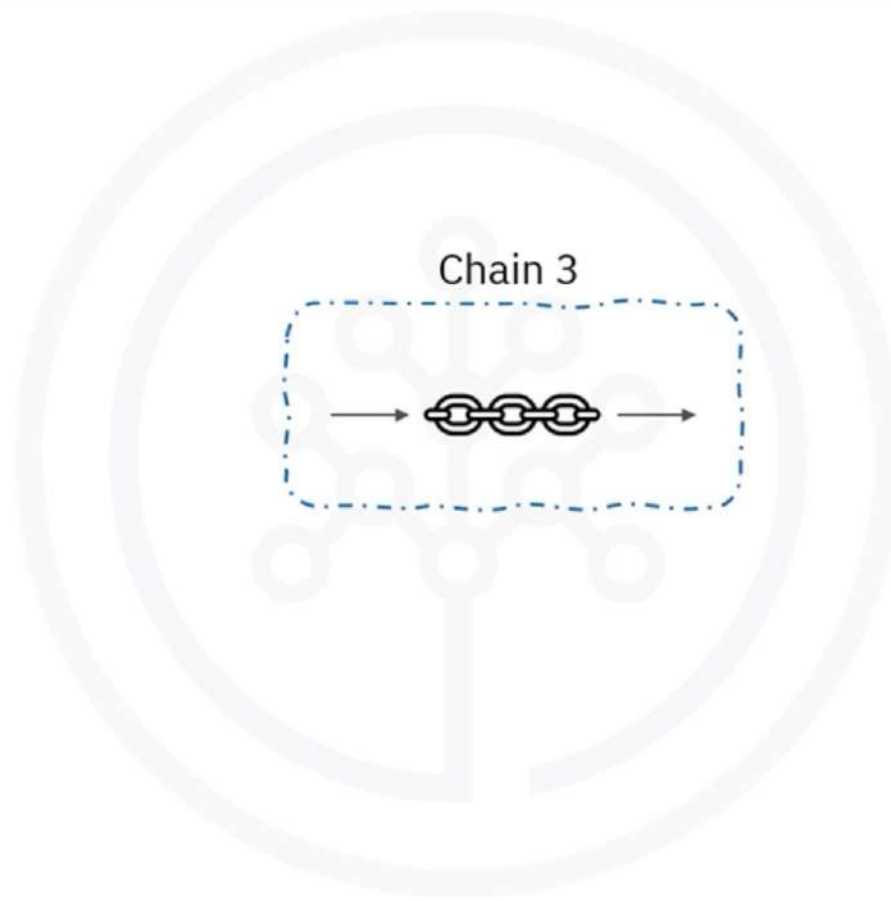
```
"""
```

```
prompt_template = PromptTemplate(template=template,  
    input_variables=['meal'])
```

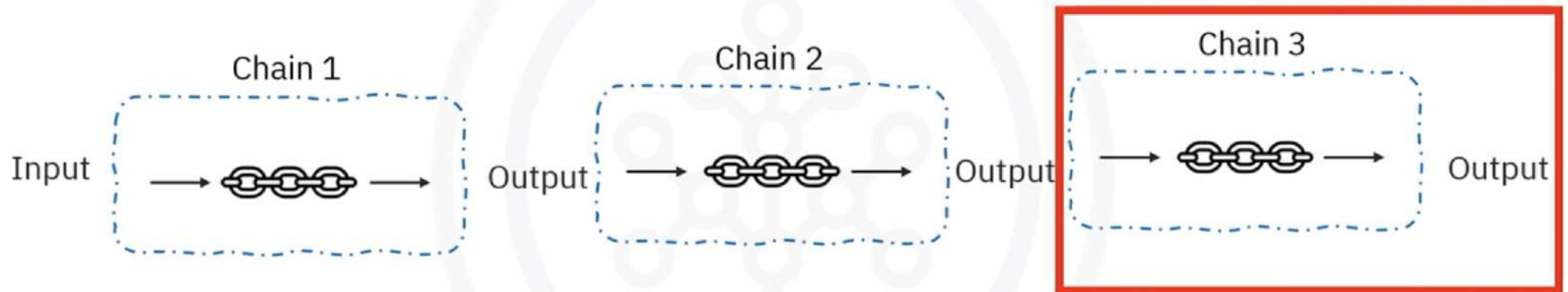
```
# chain 2
```

```
dish_chain = LLMChain(llm=mixtral_llm, prompt=prompt_template,  
    output_key='recipe')
```

Chains

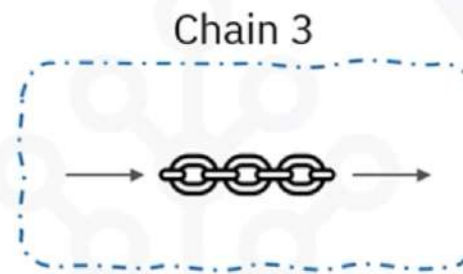


Chains



Chains

(4 pound) whole duck, dressed
½ teaspoon ground cinnamon
½ teaspoon ground ginger
¼ teaspoon ground nutmeg
¼ teaspoon ground white pepper



Three hours

Chains

```
template = """Given the recipe {recipe}, estimate how much time I need to  
cook it.
```

```
YOUR RESPONSE:
```

```
"""
```

```
prompt_template = PromptTemplate(template=template,  
    input_variables=['recipe'])
```

```
# chain 3
```

```
recipe_chain = LLMChain(llm=mixtral_llm, prompt=prompt_template,  
    output_key='time')
```


Chains

```
# overall chain
overall_chain = SequentialChain(chains=[location_chain, dish_chain,
    recipe_chain],
    input_variables=['location'],
    output_variables=['meal', 'recipe', 'time'],
    verbose= True)

overall_chain.invoke(input={'location': 'China'})
```

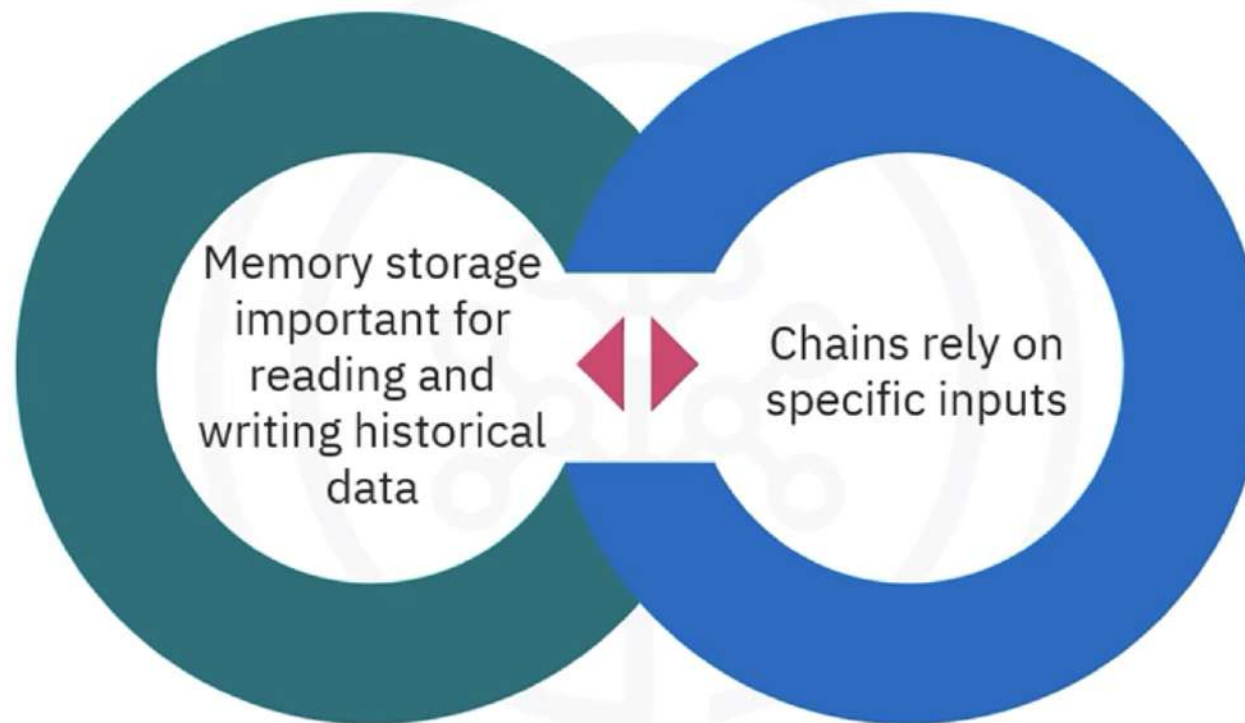
Chains

```
> Entering new SequentialChain chain...

> Finished chain.
{'location': 'China',
 'meal': 'A classic dish from China is Peking Duck. This dish '
         'is a famous duck dish from Beijing that has been prepared since the '
         'Imperial Era. The dish is prized for the thin, crisp skin, with '
         'authentic versions of the dish serving mostly the skin and little '
         'meat, sliced in front of the diners by the cook. Ducks bred '
         'specially for the dish are slaughtered after 65 days and seasoned '
         'before being roasted in a closed or hung oven.',
 'recipe': '\n'
           'To make Peking Duck at home, start by purchasing a special Peking '
           'Duck from a reputable source. Rinse the duck and pat it dry, then '
           'let it air dry for 24 hours in the refrigerator. This will help '
           'the skin become crispy when cooked.\n'
           '\n'
           'Next, prepare a marinade for the duck by combining hoisin sauce, '
           'soy sauce, rice vinegar, and five-spice powder in a bowl. Brush '
           'the marinade all over the duck, then let it sit at room '
           'temperature for 30 minutes.\n'
           '\n'
           'Preheat your oven to 375°F. Place the duck on a wire rack over a '
           'baking sheet and roast it in the oven for about 1 hour, or until '
           'the skin is crispy and the meat is cooked through.\n'
           '\n'
           'While the duck is cooking, prepare the pancakes by mixing together '
           'flour and water to form a thin batter. Heat a non-stick skillet '
           'over medium heat and brush it with a little oil. Pour a small '
           'amount of batter into the skillet and cook until the pancake is '
           'thin and slightly translucent. Repeat with the remaining batter.\n'
           '\n'
           'To serve, slice',
 'time': '\n'
        '"To make Peking Duck at home, you'll need to plan ahead and allow for "'
        '24 hours of air drying time for the duck. The actual cooking process '
        'will take about 1 hour. Preparing the marinade and pancakes will '
        'take an additional 30-45 minutes. So, all together, you should plan '
        'for about 1.5 to 2 hours to make Peking Duck from scratch.'}
```



Memory



Memory

```
from langchain.memory import ChatMessageHistory

chat = mixtral_llm

history = ChatMessageHistory()

history.add_ai_message("hi!")

history.add_user_message("what is the capital of France?")
```