In [52]:
```
import os
os.environ['OPENAI_API_KEY']="sk-HzdoPOfAhFZZR0Wig87fT3BlbkFJf3JCZ9EkD7HA
```

LLMs

LLMs, or Large Language Models, are a core component of the Langchain library.

In [51]:
```
from langchain.llms import OpenAI
```

In [47]:
```
llm=OpenAI(temperature=0.9)
name=llm.predict("I want to open a Fency Coffee cafe suggest me a good na
print(name)
```

1. The Daily Grind Coffee House
2. Piper & Bean Café
3. The Roasting Room
4. Perk Me Up Café
5. Coco Bean Café
6. The Steam House Espresso Bar
7. Creamy Cup Espresso Bar
8. The Wired Bean Café
9. Coffee & Cream Café
10. Café Creme Espresso Bar

PromptTemplate

Prompt templates are pre-defined recipes for generating prompts for language models.

In [49]:
```
from langchain.prompts import PromptTemplate
```

In [50]:
```
prompt_name_temp=PromptTemplate(
    input_variables=['type'],
    template="I want to open a Fency {type} cafe. Suggest a Good Name For
)
p=prompt_name_temp.format(type="Coffee")
print(p)
```

I want to open a Fency Coffee cafe. Suggest a Good Name For It

Chain

The LLMChain is most basic building block chain. It takes in a prompt template, formats it with the user input and returns the response from an LLM.

In [24]:
```
from langchain.chains import LLMChain
```

In [53]:
```
chain =LLMChain(llm=llm, prompt=prompt_name_temp)
chain.run("Coffee")
```

Out[53]:
```
'\n\nCoffee Elixir'
```

We are Using Verbose.

When verbose is turned on, the algorithm will provide more detailed information about its progress as your model iterates through the training process. It'll push this output right to your console!

In [54]:
```
chain=LLMChain(llm=llm, prompt=prompt_name_temp, verbose=True)
chain.run("Coffee")
```

```
> Entering new LLMChain chain...
Prompt after formatting:
I want to open a Fency Coffee cafe. Suggest a Good Name For It

> Finished chain.
```

Out[54]:
```
'\n\nDelicious Delights Coffee House.'
```

Simple Sequential Chain

The simplest form of sequential chains, where each step has a singular input/output, and the output of one step is the input to the next.

In [58]:
```
llm=OpenAI(temperature=0.6)
prompt_name_temp=PromptTemplate(
    input_variables=['type'],
    template="I want to open a Fency {type} cafe. Suggest a Good Name For
)

name_chain=LLMChain(llm=llm, prompt=prompt_name_temp)
prompt_items_name=PromptTemplate(
input_variables=['Store_type'],
template="Suggest Some Items For Fency {Store_type} cafe")


store_items_chain=LLMChain(llm=llm, prompt=prompt_items_name)
```

In [59]:
```
from langchain.chains import SimpleSequentialChain
```

In [60]:
```
chain=SimpleSequentialChain(chains=[name_chain,store_items_chain])
program=chain.run("Coffee")
print(program)
```

:

1. Artisan Coffee
2. Specialty Teas
3. Cold Brew
4. Macchiato
5. Frappuccinos
6. Gourmet Sandwiches
7. Fresh Salads
8. Paninis
9. Wraps
10. Bagels
11. Muffins
12. Croissants
13. Scones
14. Assorted Pastries
15. Fruit Smoothies
16. Italian Sodas
17. Frozen Yogurt
18. Ice Cream Sundaes

Sequential Chain

A more general form of sequential chains, allowing for multiple inputs/outputs.

In [61]:
```
llm=OpenAI(temperature=0.7)
name_temp=PromptTemplate(
input_variables=['type'],
template="I want to open a Fency {type} cafe. Suggest me Good Name for Th
name_chain=LLMChain(llm=llm,prompt=name_temp,output_key="store_name")
```

Now

In [62]:
```
llm=OpenAI(temperature=0.7)
item_temp=PromptTemplate(
input_variables=['type'],
template="Suggest Some Items For Fency {type} cafe")
item_chain=LLMChain(llm=llm,prompt=item_temp,output_key="store_item")
```

Importing Sequential Chain

In [63]:
```
from langchain.chains import SequentialChain
```

In [64]:
```
chain=SequentialChain(
chains=[name_chain,item_chain],
    input_variables=['type'],
    output_variables=['store_name','store_item'])
```

In [65]:
```
chain({"type":"Coffee"})
```

Out[65]:
```
{'type': 'Coffee',
 'store_name': '\n\n1. The Daily Grind\n2. Cafe Con Leche\n3. Java Junct
ion\n4. The Roasted Bean\n5. Bean & Brew\n6. Perk & Pour\n7. Cuppa Delig
ht\n8. Coffee House of Joy\n9. Aroma Expresso\n10. The Roast Room',
 'store_item': '\n\n1. Cold Brew Coffee\n2. Caramel Latte\n3. Irish Crea
m Coffee\n4. Nitro Coffee\n5. Espresso Drinks\n6. Chai Lattes\n7. Flavor
ed Syrups\n8. Hot Chocolate\n9. Milkshakes\n10. Frappuccinos'}
```

Agents

An agent is a component that has access to a suite of tools and can decide which tool to use based on the user's input

SERPAPI and LLM-Math Tools

SerpApi is a real-time API to access Google search results. We handle proxies, solve captchas, and parse all rich structured data for you.

The LLMMathChain equips LLMs with mathematical capabilities.

In [66]:
```
os.environ['SERPAPI_API_KEY']="65e212445d3bb93d329b6d19bca0669c9658e457d8
```

In [67]:
```
from langchain.agents import AgentType,initialize_agent,load_tools
```

In [68]:
```
from langchain.llms import OpenAI
```

In [69]:
```
llm=OpenAI(temperature=0)
tools=load_tools(["serpapi","llm-math"],llm=llm)
agent=initialize_agent(tools,llm,agent=AgentType.ZERO_SHOT_REACT_DESCRIPT
agent.run("When Was Coffee Interduced?")
```

```
> Entering new AgentExecutor chain...
 I should research the history of coffee
Action: Search
Action Input: "History of Coffee"
Observation: ['Coffee grown worldwide can trace its heritage back centurie
s to the ancient coffee forests on the Ethiopian plateau. There, legend sa
ys the goat herder Kaldi ...']
Thought: I should look for a specific date
Action: Search
Action Input: "When was coffee introduced"
Observation: The earliest credible evidence of coffee-drinking or knowledg
e of the coffee tree appears in the middle of the 15th century in the acco
unts of Ahmed al-Ghaffar in Yemen, where coffee seeds were first roasted a
nd brewed in a similar way to how it is prepared now.
Thought: I now know the final answer
Final Answer: Coffee was introduced in the 15th century.

> Finished chain.
```

Out[69]: 'Coffee was introduced in the 15th century.'

Wikipedia and LLM-Math Tools

In [70]:
```
tools=load_tools(["wikipedia","llm-math"],llm=llm)
agent=initialize_agent(tools,llm,agent=AgentType.ZERO_SHOT_REACT_DESCRIPT
agent.run("Which Was the First Company To Interduced Coffee?")
```

```
> Entering new AgentExecutor chain...
 I need to find out which company first introduced coffee.
Action: Wikipedia
Action Input: "first company to introduce coffee"
Observation: Page: Starbucks
Summary: Starbucks Corporation is an American multinational chain of coffe
ehouses and roastery reserves headquartered in Seattle, Washington. It is
the world's largest coffeehouse chain.
As of November 2022, the company had 35,711 stores in 80 countries, 15,873
of which were located in the United States. Out of Starbucks' U.S.-based s
tores, over 8,900 are company-operated, while the remainder are licensed.T
he rise of the second wave of coffee culture is generally attributed to St
arbucks, which introduced a wider variety of coffee experiences. Starbucks
serves hot and cold drinks, whole-bean coffee, micro-ground instant coffee
, espresso, caffe latte, full and loose-leaf teas, juices, Frappuccino bev
erages, pastries, and snacks. Some offerings are seasonal or specific to t
he locality of the store. Depending on the country, most locations provide
free Wi-Fi Internet access.
```

```
Page: Peet's Coffee
Summary: Peet's Coffee is a San Francisco Bay Area–based specialty coffee
roaster and retailer owned by JAB Holding Company via JDE Peet's. Founded
in 1966 by Alfred Peet in Berkeley, California, Peet's introduced the Unit
ed States to its darker roasted Arabica coffee in blends including French
roast and grades appropriate for espresso drinks. Peet's offers freshly ro
asted beans, brewed coffee and espresso beverages, as well as bottled cold
brew. In 2007, Peet's opened the first LEED Gold Certified roastery in the
United States. Peet's coffee is sold in over 14,000 grocery stores across
the United States.As of November 2021, the company had 200 stores in the U
nited States.



Page: Highlands Coffee
Summary: Highlands Coffee is a Vietnamese coffee shop chain and producer a
nd distributor of coffee products, established in Hanoi by Vietnamese Amer
ican David Thai in 1998. The establishment of the Highlands Coffee company
marked the first time an overseas Vietnamese was able to register a privat
e company within Vietnam. As of 2018, the company operates 230 coffee shop
s across Vietnam. In 2011, Highlands Coffee purchased the pho chain Phở 24
from Lý Quí Trung for an estimated US$20 million. The next year, Highlands
sold 50% of its shares to the Philippine multinational chain Jollibee for
US$25 million.In March 2012, under a partnership with Philippine Internet
café company Digital Paradise, the first hybrid Highlands/Netopia internet
café and coffee shop was opened in the Philippines.


Thought: I now know the final answer.
Final Answer: Peet's Coffee was the first company to introduce coffee.

> Finished chain.
```

Out[70]: "Peet's Coffee was the first company to introduce coffee."

Memory

Memory in LangChain refers to the various types of memory modules that store and retrieve information during a conversation.

In [71]:
```
chain=LLMChain(llm=llm,prompt=name_temp)
name=chain.run("Coffee")
print(name)
```

1. The Coffee Connoisseur
2. The Coffee Corner
3. The Coffee House
4. The Coffee Spot
5. The Coffee Room
6. The Coffee Den
7. The Coffee Barista
8. The Coffee Brew
9. The Coffee Haven
10. The Coffee Lounge

In [72]:
```
name=chain.run("Ice Tea")
print(name)
```

1. Iced Elixir
2. Chill Out Tea
3. Tea-Licious
4. Tea-Tastik
5. Tea-Fresco
6. Tea-Tonic
7. Tea-Tastique
8. Tea-Temptations
9. Tea-Treats
10. Tea-Tastic

In [42]:
```
chain.memory
```

In [43]:
```
type(chain.memory)
```

Out[43]: NoneType

ConversationBufferMemory

ConversationBufferWindowMemory keeps a list of the interactions of the conversation over time. It only uses the last K interactions. This can be useful for keeping a sliding window of the most recent interactions, so the buffer does not get too large.

In [73]:
```
from langchain.memory import ConversationBufferMemory
```

In [74]:
```
memory=ConversationBufferMemory()
chain=LLMChain(llm=llm,prompt=name_temp,memory=memory)
name=chain.run("Cold Coffee")
print(name)
```

1. Java Jolt
2. Iced Expressions
3. Chill Out Cafe
4. Frosty Brews
5. Cool Beans Cafe
6. Icy Delights
7. Chill Zone Cafe
8. Frosty Treats
9. Icy Brews
10. Frosty Java

In [75]:
```
name=chain.run("Coffee Shake")
print(name)
```

1. Java Jolt Cafe
2. The Coffee Buzz
3. The Shake Shack
4. The Coffee Craze
5. The Shake Spot
6. The Coffee Rush
7. The Shake House
8. The Coffee Swirl
9. The Shake Den
10. The Coffee Shake Shack

In [76]:
```
print(chain.memory.buffer)
```

```
Human: Cold Coffee
AI:

1. Java Jolt
2. Iced Expressions
3. Chill Out Cafe
4. Frosty Brews
5. Cool Beans Cafe
6. Icy Delights
7. Chill Zone Cafe
8. Frosty Treats
9. Icy Brews
10. Frosty Java
Human: Coffee Shake
AI:

1. Java Jolt Cafe
2. The Coffee Buzz
3. The Shake Shack
4. The Coffee Craze
5. The Shake Spot
6. The Coffee Rush
7. The Shake House
8. The Coffee Swirl
9. The Shake Den
10. The Coffee Shake Shack
```

Conversation Chain

The ConversationChain has a simple type of memory that remembers all previous inputs/outputs and adds

In [77]:
```
from langchain.chains import ConversationChain
```

In [78]:
```
llm=OpenAI(temperature=0.7)
```

In [79]:
```
convo=ConversationChain(llm=llm)
print(convo.prompt.template)
```

```
The following is a friendly conversation between a human and an AI. The AI is talkative and provides lots of specific details from its context. If the AI does not know the answer to a question, it truthfully says it does not know.

Current conversation:
{history}
Human: {input}
AI:
```

In [81]:
```
convo.run("Which was the First Coffee Cafe")
```

Out[81]:
```
' The first coffeehouse, called Kiva Han, opened in Istanbul in 1475. Ki
va Han is credited with starting the tradition of social interaction and
conversation over coffee.'
```

In [82]:
```
convo.run("Origin of Coffee is from Which Country")
```

Out[82]:
```
' Coffee is believed to have originated in Ethiopia, though there is no
definitive proof of this. Coffee spread to the rest of the world through
traders and merchants in the Middle East and Africa, eventually becoming
popular in Europe and America.'
```

In [83]:
```
convo.run("Best Coffee is Found In Which Country")
```

Out[83]:
```
" That's a difficult question to answer as everyone has different prefer
ences for coffee. Generally, coffee from Ethiopia, Kenya, Colombia, and
Brazil is considered among the best."
```

In [84]:
```
print(convo.memory.buffer)
```

```
Human: Which is the first mobile phone in the world
AI:  The first mobile phone was the Motorola DynaTAC 8000X, released in 19
83. It was the first commercially available mobile phone and weighed almos
t 2 pounds!
Human: Which was the First Coffee Cafe
AI:  The first coffeehouse, called Kiva Han, opened in Istanbul in 1475. K
iva Han is credited with starting the tradition of social interaction and
conversation over coffee.
Human: Origin of Coffee is from Which Country
AI:  Coffee is believed to have originated in Ethiopia, though there is no
definitive proof of this. Coffee spread to the rest of the world through t
raders and merchants in the Middle East and Africa, eventually becoming po
pular in Europe and America.
Human: Best Coffee is Found In Which Country
AI:  That's a difficult question to answer as everyone has different prefe
rences for coffee. Generally, coffee from Ethiopia, Kenya, Colombia, and B
razil is considered among the best.
```

ConversationBufferWindowMemory

ConversationBufferWindowMemory keeps a list of the interactions of the conversation over time. It only uses the last K interactions. This can be useful for keeping a sliding window of the most recent interactions, so the buffer does not get too large.

In [85]:
```
from langchain.memory import ConversationBufferWindowMemory
```

In [86]:
```
memory=ConversationBufferWindowMemory(k=1)
```

In [88]:
```
llm=OpenAI(temperature=0.7)
convo=ConversationChain(llm=llm,memory=memory)
convo.run("Who won the first company to open coffee Cafe")
```

Out[88]:
```
' The first coffee cafe was opened by a man named Kaldi in Ethiopia in t
he 9th century. He discovered the energizing effects of coffee when he n
oticed that his goats were more energetic after eating certain berries.'
```

In [89]:
```
convo.run("Best Coffee Brands in India")
```

Out[89]:
```
' There are many popular coffee brands in India, such as Bru, Nescafe, T
ata Coffee, Café Coffee Day, and Premcafe. Each brand is known for its u
nique taste, aroma, and quality of coffee beans.'
```

In [90]:
```
convo.run("Type Of Coffee?")
```

Out[90]:
```
' There are many types of coffee available in India, including filter co
ffee, instant coffee, cappuccino, latte, espresso, mocha, macchiato, and
cold brew. Popular filter coffee blends include South Indian filter coff
ee, Mysore filter coffee, and Mangalore filter coffee.'
```

In [ ]:

In [ ]: