

Tool Integration Use Case – Math Assistant

WEEK 4 ASSIGNMENT

```
[24]: pip install langchain openai
```

```
Requirement already satisfied: langchain in c:\users\paval\anaconda3\lib\site-packages (0.1.12)
Requirement already satisfied: openai in c:\users\paval\anaconda3\lib\site-packages (1.82.0)
Requirement already satisfied: PyYAML>=5.3 in c:\users\paval\anaconda3\lib\site-packages (from langchain) (6.0.1)
Requirement already satisfied: SQLAlchemy<3,>=1.4 in c:\users\paval\anaconda3\lib\site-packages (from langchain) (2.0.34)
Requirement already satisfied: aiohttp<4.0.0,>=3.8.3 in c:\users\paval\anaconda3\lib\site-packages (from langchain) (3.10.5)
Requirement already satisfied: dataclasses-json<0.7,>=0.5.7 in c:\users\paval\anaconda3\lib\site-packages (from langchain) (0.6.7)
Requirement already satisfied: jsonpatch<2.0,>=1.33 in c:\users\paval\anaconda3\lib\site-packages (from langchain) (1.33)
Requirement already satisfied: langchain-community<0.1,>=0.0.28 in c:\users\paval\anaconda3\lib\site-packages (from langchain) (0.0.38)
Requirement already satisfied: langchain-core<0.2.0,>=0.1.31 in c:\users\paval\anaconda3\lib\site-packages (from langchain) (0.1.53)
Requirement already satisfied: langchain-text-splitters<0.1,>=0.0.1 in c:\users\paval\anaconda3\lib\site-packages (from langchain) (0.0.2)
Requirement already satisfied: langsmith<0.2.0,>=0.1.17 in c:\users\paval\anaconda3\lib\site-packages (from langchain) (0.1.147)
Requirement already satisfied: numpy<2,>=1 in c:\users\paval\anaconda3\lib\site-packages (from langchain) (1.26.4)
Requirement already satisfied: pydantic<3,>=1 in c:\users\paval\anaconda3\lib\site-packages (from langchain) (2.8.2)
Requirement already satisfied: requests<3,>=2 in c:\users\paval\anaconda3\lib\site-packages (from langchain) (2.32.3)
Requirement already satisfied: tenacity<9.0.0,>=8.1.0 in c:\users\paval\anaconda3\lib\site-packages (from langchain) (8.2.3)
Requirement already satisfied: anyio<5,>=3.5.0 in c:\users\paval\anaconda3\lib\site-packages (from openai) (4.2.0)
Requirement already satisfied: distro<2,>=1.7.0 in c:\users\paval\anaconda3\lib\site-packages (from openai) (1.9.0)
Requirement already satisfied: httpx<1,>=0.23.0 in c:\users\paval\anaconda3\lib\site-packages (from openai) (0.27.0)
Requirement already satisfied: jiter<1,>=0.4.0 in c:\users\paval\anaconda3\lib\site-packages (from openai) (0.10.0)
Requirement already satisfied: sniffio in c:\users\paval\anaconda3\lib\site-packages (from openai) (1.3.0)
Requirement already satisfied: tqdm>4 in c:\users\paval\anaconda3\lib\site-packages (from openai) (4.66.5)
Requirement already satisfied: typing-extensions<5,>=4.11 in c:\users\paval\anaconda3\lib\site-packages (from openai) (4.11.0)
Requirement already satisfied: aiohappyeyeballs>=2.3.0 in c:\users\paval\anaconda3\lib\site-packages (from aiohttp<4.0.0,>=3.8.3->langchain) (2.4.0)
Requirement already satisfied: aiosignal>=1.1.2 in c:\users\paval\anaconda3\lib\site-packages (from aiohttp<4.0.0,>=3.8.3->langchain) (1.2.0)
Requirement already satisfied: attrs>=17.3.0 in c:\users\paval\anaconda3\lib\site-packages (from aiohttp<4.0.0,>=3.8.3->langchain) (23.1.0)
```

```
[25]: def safe_eval(expression: str) -> float:
      import re
      # Allow only digits, operators, and decimal points
      if re.fullmatch(r"[\d\s\+\-\*/\.\(\)]+", expression):
          return eval(expression)
      else:
          raise ValueError("Unsafe expression")
```

```
[26]: from langchain.tools import Tool

      calculator_tool = Tool(
          name="Calculator",
          func=safe_eval,
          description="Useful for solving basic math problems like addition, subtraction, multiplication, division."
      )
```

```
[27]: from langchain.agents import initialize_agent, AgentType
      from langchain.chat_models import ChatOpenAI

      llm = ChatOpenAI(model="gpt-4", temperature=0)

      agent = initialize_agent(
          tools=[calculator_tool],
          llm=llm,
```

```
      agent=AgentType.ZERO_SHOT_REACT_DESCRIPTION,
      verbose=True
      )
```

```
C:\Users\paval\anaconda3\Lib\site-packages\langchain_core\_api\deprecation.py:119: LangChainDeprecationWarning: The class `ChatOpenAI` was deprecated in
LangChain 0.0.10 and will be removed in 0.3.0. An updated version of the class exists in the langchain-openai package and should be used instead. To use
it run `pip install -U langchain-openai` and import as `from langchain.openai import ChatOpenAI`.
  warn_deprecated(
C:\Users\paval\anaconda3\Lib\site-packages\langchain_core\_api\deprecation.py:119: LangChainDeprecationWarning: The function `initialize_agent` was depre
cated in LangChain 0.1.0 and will be removed in 0.2.0. Use Use new agent constructor methods like create_react_agent, create_json_agent, create_structur
e_d_chat_agent, etc. instead.
  warn_deprecated(
```

```
[28]: user_input = "What's 15 times 24?"
      response = agent.run(user_input)
      print("Answer:", response)
```

```
C:\Users\paval\anaconda3\Lib\site-packages\langchain_core\_api\deprecation.py:119: LangChainDeprecationWarning: The method `Chain.run` was deprecated in
langchain 0.1.0 and will be removed in 0.2.0. Use invoke instead.
  warn_deprecated(
```

```
> Entering new AgentExecutor chain...
This is a simple multiplication problem. I can use the calculator to solve it.
Action: Calculator
Action Input: 15 * 24
Observation: 360
Thought:I now know the final answer
Final Answer: 360

> Finished chain.
Answer: 360
```