

```
!pip install serpapi google-search-results openai langchain streamlit

import os
from serpapi import GoogleSearch
from langchain.tools import StructuredTool
from pydantic import BaseModel
from typing import List
import openai
from langchain_openai import ChatOpenAI
from langchain.agents import initialize_agent, AgentType

SERPAPI_API_KEY = ""
os.environ["SERPAPI_API_KEY"] = SERPAPI_API_KEY
os.environ["OPENAI_API_KEY"] = ""
openai.api_key = os.getenv("OPENAI_API_KEY")

def search_tool(query):
    search = GoogleSearch({
        "q": query,
        "api_key": SERPAPI_API_KEY
    })
    results = search.get_dict()
    formatted_results = [result['title'] + ": " + result['snippet'] for result in results.get('organic_results', [])]
    return formatted_results

class ComparisonInput(BaseModel):
    items: List[str]
    category: str

class ComparisonTool:
    def __call__(self, items: List[str], category: str) -> str:
        if not items or not category:
            return "Invalid inputs. Please provide items and a category for comparison."
        comparison_result = f"Comparing {', '.join(items)} in the category: {category}."
        return comparison_result

comparison_tool = StructuredTool.from_function(
    func=ComparisonTool().__call__,
    name="comparison_tool",
    description="Compares items based on a given category",
    input_schema=ComparisonInput
)
```

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Requirement already satisfied: serpapi in /usr/local/lib/python3.10/dist-packages (0.1.5)
Requirement already satisfied: google-search-results in /usr/local/lib/python3.10/dist-packages (2.4.2)
Requirement already satisfied: openai in /usr/local/lib/python3.10/dist-packages (1.54.4)
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Requirement already satisfied: streamlit in /usr/local/lib/python3.10/dist-packages (1.40.1)
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Requirement already satisfied: PyYAML>=5.3 in /usr/local/lib/python3.10/dist-packages (from langchain) (6.0.2)
Requirement already satisfied: SQLAlchemy<3,>=1.4 in /usr/local/lib/python3.10/dist-packages (from langchain) (2.0.35)
Requirement already satisfied: aiohttp<4.0.0,>=3.8.3 in /usr/local/lib/python3.10/dist-packages (from langchain) (3.10.10)
Requirement already satisfied: async-timeout<5.0.0,>=4.0.0 in /usr/local/lib/python3.10/dist-packages (from langchain) (4.0.0)
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Requirement already satisfied: langchain-text-splitters<0.4.0,>=0.3.0 in /usr/local/lib/python3.10/dist-packages (from langchain) (0.3.0)
Requirement already satisfied: langsmith<0.2.0,>=0.1.17 in /usr/local/lib/python3.10/dist-packages (from langchain) (0.1.142)
Requirement already satisfied: numpy<2,>=1 in /usr/local/lib/python3.10/dist-packages (from langchain) (1.26.4)
Requirement already satisfied: tenacity!=8.4.0,<10,>=8.1.0 in /usr/local/lib/python3.10/dist-packages (from langchain) (9.0.0)
Requirement already satisfied: altair<6,>=4.0 in /usr/local/lib/python3.10/dist-packages (from streamlit) (4.2.2)
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Requirement already satisfied: packaging<25,>=20 in /usr/local/lib/python3.10/dist-packages (from streamlit) (24.2)
Requirement already satisfied: pandas<3,>=1.4.0 in /usr/local/lib/python3.10/dist-packages (from streamlit) (2.2.2)
Requirement already satisfied: pillow<12,>=7.1.0 in /usr/local/lib/python3.10/dist-packages (from streamlit) (11.0.0)
Requirement already satisfied: protobuf<6,>=3.20 in /usr/local/lib/python3.10/dist-packages (from streamlit) (4.25.5)
Requirement already satisfied: pyarrow>=7.0 in /usr/local/lib/python3.10/dist-packages (from streamlit) (17.0.0)
Requirement already satisfied: rich<14,>=10.14.0 in /usr/local/lib/python3.10/dist-packages (from streamlit) (13.9.4)
Requirement already satisfied: toml<2,>=0.10.1 in /usr/local/lib/python3.10/dist-packages (from streamlit) (0.10.2)
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Requirement already satisfied: gitpython!=3.1.19,<4,>=3.0.7 in /usr/local/lib/python3.10/dist-packages (from streamlit) (3.1
Requirement already satisfied: pydeck<1,>=0.8.0b4 in /usr/local/lib/python3.10/dist-packages (from streamlit) (0.9.1)
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Requirement already satisfied: attrs>=17.3.0 in /usr/local/lib/python3.10/dist-packages (from aiohttp<4.0.0,>=3.8.3->langcha
Requirement already satisfied: frozenlist>=1.1.1 in /usr/local/lib/python3.10/dist-packages (from aiohttp<4.0.0,>=3.8.3->lan
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Requirement already satisfied: entrypoints in /usr/local/lib/python3.10/dist-packages (from altair<6,>=4.0->streamlit) (0.4)
Requirement already satisfied: jinja2 in /usr/local/lib/python3.10/dist-packages (from altair<6,>=4.0->streamlit) (3.1.4)
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Requirement already satisfied: orjson<4.0.0,>=3.9.14 in /usr/local/lib/python3.10/dist-packages (from langsmith<0.2.0,>=0.1.
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Requirement already satisfied: python-dateutil>=2.8.2 in /usr/local/lib/python3.10/dist-packages (from pandas<3,>=1.4.0->str
```

```
from langchain.tools import StructuredTool
from pydantic import BaseModel
from typing import List

class ComparisonInput(BaseModel):
    items: List[str]
    category: str

class ComparisonTool:
    def __call__(self, items: List[str], category: str) -> str:
        # Comparison logic
        if not items or not category:
            return "Invalid inputs. Please provide items and a category for comparison."

        comparison_result = f"Comparing {' '.join(items)} in the category: {category}."
        return comparison_result

comparison_tool = StructuredTool.from_function(
    func=ComparisonTool().__call__,
    name="comparison_tool",
    description="Compares items based on a given category",
    input_schema=ComparisonInput
)

print(comparison_tool.invoke({"items": ["item1", "item2"], "category": "price"}))
```

➦ Comparing item1, item2 in the category: price.

```
class AnalysisTool:
    def __init__(self, api_key):
        self.model = ChatOpenAI(model="gpt-3.5-turbo", openai_api_key=api_key)

    def analyze(self, text: str) -> str:
        prompt = f"Analyze and provide insights for the following text:\n{text}"
        response = self.model.invoke([{"role": "user", "content": prompt}])
        return response.content

analysis_tool = AnalysisTool(api_key=openai.api_key)
```

```
class ReActAgent:
    def __init__(self):
        self.model = ChatOpenAI(model="gpt-3.5-turbo", openai_api_key=openai.api_key)
        self.tools = {
            "search": search_tool,
            "compare": comparison_tool,
            "analyze": analysis_tool.analyze
        }

    def respond(self, user_query: str) -> str:
```

```

response = self.model.invoke({"role": "user", "content": user_query})
if "search" in user_query.lower():
    result = self.tools["search"](user_query)
elif "compare" in user_query.lower():
    result = self.tools["compare"].invoke({"items": ["product1", "product2"], "category": "price"})
elif "analyze" in user_query.lower():
    result = self.tools["analyze"](user_query)
else:
    result = "I was unable to determine the correct tool to use for this query."
return result

```

```
!pip install streamlit
```

```
!wget https://github.com/cloudflare/cloudflared/releases/latest/download/cloudflared-linux-amd64 -O cloudflared
```

```
!chmod +x cloudflared
```

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Requirement already satisfied: streamlit in /usr/local/lib/python3.10/dist-packages (1.40.1)
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Requirement already satisfied: urllib3<3,>=1.21.1 in /usr/local/lib/python3.10/dist-packages (from requests<3,>=2.27->streamlit) (2.2.3)
Requirement already satisfied: certifi>=2017.4.17 in /usr/local/lib/python3.10/dist-packages (from requests<3,>=2.27->streamlit) (2024.12.14)
Requirement already satisfied: markdown-it-py>=2.2.0 in /usr/local/lib/python3.10/dist-packages (from rich<14,>=10.14.0->streamlit) (3.0.0)
Requirement already satisfied: pygments<3.0.0,>=2.13.0 in /usr/local/lib/python3.10/dist-packages (from rich<14,>=10.14.0->streamlit) (2.18.1)
Requirement already satisfied: smmap<6,>=3.0.1 in /usr/local/lib/python3.10/dist-packages (from gitdb<5,>=4.0.1->gitpython!=3.1.19,<4,>=3.0.7) (5.0.0)
Requirement already satisfied: MarkupSafe>=2.0 in /usr/local/lib/python3.10/dist-packages (from jinja2->altair<6,>=4.0->streamlit) (3.0.2)
Requirement already satisfied: attrs>=22.2.0 in /usr/local/lib/python3.10/dist-packages (from jsonschema>=3.0->altair<6,>=4.0->streamlit) (25.1.0)
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Requirement already satisfied: referencing>=0.28.4 in /usr/local/lib/python3.10/dist-packages (from jsonschema>=3.0->altair<6,>=4.0->streamlit) (0.36.0)
Requirement already satisfied: rpds-py>=0.7.1 in /usr/local/lib/python3.10/dist-packages (from jsonschema>=3.0->altair<6,>=4.0->streamlit) (0.22.0)
Requirement already satisfied: mdurl<=0.1 in /usr/local/lib/python3.10/dist-packages (from markdown-it-py>=2.2.0->rich<14,>=10.14.0->streamlit) (0.1.2)
Requirement already satisfied: six>=1.5 in /usr/local/lib/python3.10/dist-packages (from python-dateutil>=2.8.2->pandas<3,>=1.4.0->streamlit) (1.17.0)
--2024-11-14 23:03:57-- https://github.com/cloudflare/cloudflared/releases/latest/download/cloudflared-linux-amd64
Resolving github.com (github.com)... 140.82.112.3
Connecting to github.com (github.com)|140.82.112.3|:443... connected.
HTTP request sent, awaiting response... 302 Found
Location: https://github.com/cloudflare/cloudflared/releases/download/2024.11.0/cloudflared-linux-amd64 [following]
--2024-11-14 23:03:58-- https://github.com/cloudflare/cloudflared/releases/download/2024.11.0/cloudflared-linux-amd64
Reusing existing connection to github.com:443.
HTTP request sent, awaiting response... 302 Found
Location: https://objects.githubusercontent.com/github-production-release-asset-2e65be/106867604/605aa802-f224-465f-88b8-ca82-f224-11-14 23:03:58-- https://objects.githubusercontent.com/github-production-release-asset-2e65be/106867604/605aa802-f224-11-14 23:03:58--
Resolving objects.githubusercontent.com (objects.githubusercontent.com)... 185.199.108.133, 185.199.109.133, 185.199.110.133
Connecting to objects.githubusercontent.com (objects.githubusercontent.com)|185.199.108.133|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 37388895 (36M) [application/octet-stream]
Saving to: 'cloudflared'

```

```

import threading

def run_streamlit():
    !streamlit run st_run.py --server.port 8501

threading.Thread(target=run_streamlit).start()

```

```
!./cloudflared tunnel --url http://localhost:8501
```

```
... 2024-11-15T00:16:29Z INF Thank you for trying Cloudflare Tunnel. Doing so, without a Cloudflare account, is a quick way to e
2024-11-15T00:16:29Z INF Requesting new quick Tunnel on trycloudflare.com...
```

Collecting usage statistics. To deactivate, set browser.gatherUsageStats to false.

You can now view your Streamlit app in your browser.

Local URL: <http://localhost:8501>
 Network URL: <http://172.28.0.12:8501>
 External URL: <http://35.224.86.8:8501>

```
2024-11-15T00:16:33Z INF +-----+
2024-11-15T00:16:33Z INF | Your quick Tunnel has been created! Visit it at (it may take some time to be reachable): |
2024-11-15T00:16:33Z INF | https://hill-october-processed-delivery.trycloudflare.com |
2024-11-15T00:16:33Z INF +-----+
2024-11-15T00:16:33Z INF Cannot determine default configuration path. No file [config.yml config.yaml] in [~/cloudflared ~/
2024-11-15T00:16:33Z INF Version 2024.11.0 (Checksum cd7095b33a861ccb055606d512fc74d81865f46fe9c2c7c84452ee60383db13c)
2024-11-15T00:16:33Z INF GOOS: linux, GOVersion: go1.22.5, GoArch: amd64
2024-11-15T00:16:33Z INF Settings: map[ha-connections:1 protocol:quic url:http://localhost:8501]
2024-11-15T00:16:33Z INF cloudflared will not automatically update when run from the shell. To enable auto-updates, run clou
2024-11-15T00:16:33Z INF Generated Connector ID: c4abd2bc-5742-4f85-b496-a33e01929fd7
2024-11-15T00:16:33Z INF Initial protocol quic
2024-11-15T00:16:33Z INF ICMP proxy will use 172.28.0.12 as source for IPv4
2024-11-15T00:16:33Z INF ICMP proxy will use :: as source for IPv6
2024-11-15T00:16:33Z INF Starting metrics server on 127.0.0.1:35525/metrics
2024/11/15 00:16:33 failed to sufficiently increase receive buffer size (was: 208 kiB, wanted: 7168 kiB, got: 416 kiB). See
2024-11-15T00:16:34Z INF Registered tunnel connection connIndex=0 connection=5e93c159-a323-4161-afa6-bf9b6810bf8f event=0 ip
2024-11-15T00:19:49Z ERR error="stream 45 canceled by remote with error code 0" connIndex=0 event=1 ingressRule=0 originSer
2024-11-15T00:19:49Z ERR Request failed error="stream 45 canceled by remote with error code 0" connIndex=0 dest=https://hill
2024-11-15T00:19:49Z ERR error="stream 49 canceled by remote with error code 0" connIndex=0 event=1 ingressRule=0 originSer
2024-11-15T00:19:49Z ERR Request failed error="stream 49 canceled by remote with error code 0" connIndex=0 dest=https://hill
2024-11-15T00:19:49Z ERR error="stream 53 canceled by remote with error code 0" connIndex=0 event=1 ingressRule=0 originSer
2024-11-15T00:19:49Z ERR Request failed error="stream 53 canceled by remote with error code 0" connIndex=0 dest=https://hill
2024-11-15T00:19:49Z ERR error="stream 37 canceled by remote with error code 0" connIndex=0 event=1 ingressRule=0 originSer
2024-11-15T00:19:49Z ERR Request failed error="stream 37 canceled by remote with error code 0" connIndex=0 dest=https://hill
2024-11-15T00:19:50Z ERR error="stream 61 canceled by remote with error code 0" connIndex=0 event=1 ingressRule=0 originSer
2024-11-15T00:19:50Z ERR Request failed error="stream 61 canceled by remote with error code 0" connIndex=0 dest=https://hill
2024-11-15T00:19:50Z ERR error="stream 77 canceled by remote with error code 0" connIndex=0 event=1 ingressRule=0 originSer
2024-11-15T00:19:50Z ERR Request failed error="stream 77 canceled by remote with error code 0" connIndex=0 dest=https://hill
2024-11-15T00:19:50Z ERR error="stream 73 canceled by remote with error code 0" connIndex=0 event=1 ingressRule=0 originSer
2024-11-15T00:19:50Z ERR Request failed error="stream 73 canceled by remote with error code 0" connIndex=0 dest=https://hill
2024-11-15T00:19:50Z ERR error="stream 65 canceled by remote with error code 0" connIndex=0 event=1 ingressRule=0 originSer
2024-11-15T00:19:50Z ERR Request failed error="stream 65 canceled by remote with error code 0" connIndex=0 dest=https://hill
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Question: What is the capital of mars

Answer: ["Mars | KimStanleyRobinson.info: A new city, Mangala, was built and became the administrative capital of Mars. Prior to the First Martian Revolution, young Reds had a stone eyetooth as a sign ...","Londres Nova | The Expanse Wiki - Fandom: Londres Nova is the capital and largest city of Mars, located in the northern reach of the Aurorae Sinus. Approximately 40,000 people live and work there.", "Why do Martian cities have such small populations?: It says that Londres Nova (Latin for New London) is the capital of MCR. It is stated that it's population is something like 40k people. How ...","Nüwa Martian City: Nüwa is the capital of a proposed colony of one million people on Mars. The rest of the cities follow the same urban strategy, such as Abalos City, located in ...","Mars | The Babylon Project | Fandom: Mars Dome One: Mars capital, located in Solis Planum. Includes the Mars Government Center and Earthforce Base.", "Mars trilogy settlements | KimStanleyRobinson.info: Mangala: capital city of Mars built after the independence revolution. Constructed as a work of art. Home of the duma and seat of the Martian government.", "Mars: Mars is the fourth planet from the Sun. The surface of Mars is orange-red because it is covered in iron(III) oxide dust, giving it the nickname "the Red Planet" ...","What should the first city on Mars be called?: Pasadena, after Pasadena California which is where NASA JPL is located (they landed the first probe on Mars). Mariner, after the first ...","What is the capital of mars: Answer: Percival Lowell. Explanation: Solis Lacus is known for the variability of its appearance, changing its size and shape when dust ..."]

Question: what is the better site to purchase home goods products on Black Friday

Answer: ["Best Early Black Friday Deals on Home Products: Consumer Reports is tracking the best early Black Friday deals on air purifiers, mattresses, large appliances, and other top-rated household ...","Black Friday & Cyber Monday Kitchen and Home Deals 2024: Best Buy — Best Buy's legendary sale is here, with new Doorbusters added every Friday! Save on everything from laptops to major appliances.", "HomeGoods Black Friday 2024 Ad, Deals & Sales: See the HomeGoods Black Friday 2024 ad at BlackFriday.com. Find the best 2024 HomeGoods Black Friday deals and sales. Follow all of the breaking ...","New homeowner who needs to buy lots of stuff. What ...: Get a Costco membership NOW! They ship a lot of those items for free, and you can get insane deals on larger items like grills, couches, ...","59 Furniture and Decor Black Friday Sales 2024: We rounded up the most popular furniture and decor Black Friday 2024 sales to shop. Browse through brands like Sundays, Article, Homebody, ...","The best Black Friday home deals 2024: Amazon: explore Amazon's 'Holiday Deals'. · Anthropologie: discounts on furniture,

bedding, decor and more. · Best Buy: enjoy savings on Instant air fryers, ...";The Best Early Black Friday Deals of 2024: Home goods. Top early deals: Arlo Skye Carry-On Max: 277, *was*395; Beats Solo 4 Headphones: 130, *was*200; Cozy Earth Pajama Set: \$158, was ...";The 2024 Black Friday Furniture Deals AD Editors Are ...: The furniture and home goods retailer is swimming in Black Friday sales, dropping prices by up to 70% sitewide on vacuums, living room furniture ..."]

Query: Compare Products, homegoods black friday, tiktok, amazon

Answer: Agent Response Price:

TikTok is a free social media platform that allows users to create and share short videos. There are no direct costs associated with using TikTok. Amazon, on the other hand, is an e-commerce platform where users can purchase a wide range of products. The prices of products on Amazon can vary depending on the seller and product being purchased. Quality:

TikTok is a popular social media platform with a large user base and a wide variety of content. The quality of content on TikTok can vary depending on the user, but overall, it offers a fun and engaging experience for users. Amazon is known for its wide selection of products and reliable customer service. The quality of products on Amazon can vary depending on the seller, but overall, it offers a convenient and trustworthy shopping experience for customers. Overall, TikTok offers a free and entertaining social media experience, while Amazon offers a wide selection of products and reliable customer service. The two platforms serve different purposes and cater to different needs, so it is difficult to directly compare them based on price and quality.

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