

How do we implement MCP in Langchain?

Model Context Protocol: When you build tools, it is only for your service. If you talk about GitHub or GoogleDrive, Slack, if these services want AI to interact with them, Say you have a ChatBot and if you want to tell GitHub to create a new repo, then GitHub has to give you this access for AI to perform this operation. So GitHub will create certain tools and these tools can be accessed from the outside world. How to make this interaction with GitHub tools? What if we can make a common protocol between this GitHub server and our Host machine, which will have a client. That protocol is MCP so we don't have to write a lot of code on the client side.

Create uv environment

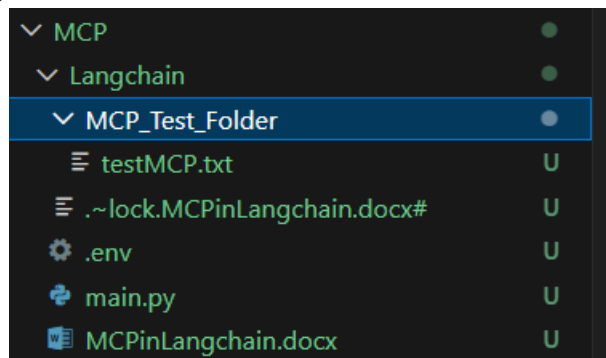
```
uv add dotenv
```

```
uv add langchain_openai
```

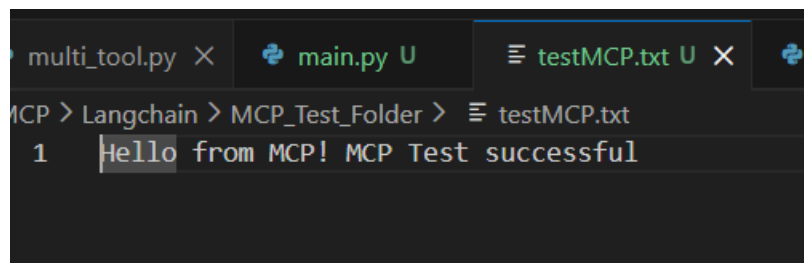
```
uv add langchain_core
```

```
uv add uv add langchain_mcp_adapters
```

we created main.py and ran



It created the file testMCP.txt



Now how to create my own MCP_server on Langchain?

```
uv add fastmcp
```

```
uv add langchain_community
```

```
uv add ddgs
```

Run mcp_server.py

```
epos/AIEngineering_JavaPython/MCP/Langchain/mcp_server/mcp_server.py

Docs:      https://gofastmcp.com
Hosting:    https://fastmcp.cloud

[12/29/25 19:31:21] INFO      Starting MCP server 'TestMCPServer' with
                             transport 'sse' on http://localhost:8000/sse
INFO:       Started server process [361540]
INFO:       Waiting for application startup.
INFO:       Application startup complete.
INFO:       Uvicorn running on http://localhost:8000 (Press CTRL+C to quit)
```

```
(RAG_LC) PS C:\Users\saito\source\repos\AIEngineering_JavaPython\MCP\Langchain\mcp_server> py
thon .\mcp_server.py
Tool name validation warning for "Search the web":
- Tool name contains spaces, which may cause parsing issues
```

New terminal

Run mcp_client.py

```
(RAG_LC) PS C:\Users\saito\source\repos\AIEngineering_JavaPython\MCP\Langchain\mcp_server> py
thon .\mcp_client.py
```

Server accepted

```
INFO:       ::1:50206 - "POST /messages/?session_id=9de44ae755ed407e928e942e81aa3e10 HTTP/1.1"
202 Accepted
INFO:       ::1:50206 - "POST /messages/?session_id=9de44ae755ed407e928e942e81aa3e10 HTTP/1.1"
202 Accepted
INFO:       ::1:62194 - "GET /sse HTTP/1.1" 200 OK
INFO:       ::1:62195 - "POST /messages/?session_id=5285c20412504a5ab4b83d59ec512bcd HTTP/1.1"
202 Accepted
INFO:       ::1:62195 - "POST /messages/?session_id=5285c20412504a5ab4b83d59ec512bcd HTTP/1.1"
202 Accepted
INFO:       ::1:62195 - "POST /messages/?session_id=5285c20412504a5ab4b83d59ec512bcd HTTP/1.1"
202 Accepted
```

```
(mcp_server) PS C:\Users\saite\source\repos\aiengineering_saver\python\aiengineering\mcp_server> python .\mcp_client.py
```

Lionel Messi's debut match for Inter Miami took place in the United States. The current time in the United States varies by time zone. Here are the current times for the main time zones in the continental U.S.:

- Eastern Standard Time (EST): 14:48
- Central Standard Time (CST): 13:48
- Mountain Standard Time (MST): 12:48
- Pacific Standard Time (PST): 11:48

Please note that these times do not account for daylight saving changes.

Lets comment out the Search tool and retry

```
python .\mcp_client.py
```

Lionel Messi's debut match for Inter Miami took place in the United States. The current time in the United States varies due to multiple time zones. Here are the current times in the main continental U.S. time zones:

- Eastern Time (ET)
- Central Time (CT)
- Mountain Time (MT)
- Pacific Time (PT)

Please specify which time zone you are interested in, or if you would like the current time for a specific city.

Basically it doesn't know the time, unlike last time