

DevOps

Automated Testing Assignment

Sap: 500110800

Installing Fast-API

```
C:\Users\arai0>pip install fastapi uvicorn requests pytest
Defaulting to user installation because normal site-packages is not writeable
Collecting fastapi
  Downloading fastapi-0.115.12-py3-none-any.whl.metadata (27 kB)
Collecting uvicorn
  Downloading uvicorn-0.34.0-py3-none-any.whl.metadata (6.5 kB)
Collecting requests
  Downloading requests-2.32.3-py3-none-any.whl.metadata (4.6 kB)
Collecting pytest
  Downloading pytest-8.3.5-py3-none-any.whl.metadata (7.6 kB)
Collecting starlette<0.47.0,>=0.40.0 (from fastapi)
  Downloading starlette-0.46.1-py3-none-any.whl.metadata (6.2 kB)
Collecting pydantic!=1.8,!<1.8.1,!<2.0.0,!<2.0.1,!<2.1.0,<3.0.0,>=1.7.4 (from fastapi)
  Downloading pydantic-2.10.6-py3-none-any.whl.metadata (30 kB)
Collecting typing-extensions>=4.8.0 (from fastapi)
  Downloading typing_extensions-4.13.0-py3-none-any.whl.metadata (3.0 kB)
Collecting click>=7.0 (from uvicorn)
  Downloading click-8.1.8-py3-none-any.whl.metadata (2.3 kB)
Collecting h11>=0.8 (from uvicorn)
  Downloading h11-0.14.0-py3-none-any.whl.metadata (8.2 kB)
Collecting charset-normalizer<4,>=2 (from requests)
  Downloading charset_normalizer-3.4.1-cp313-cp313-win_amd64.whl.metadata (36 kB)
Collecting idna<4,>=2.5 (from requests)
  Downloading idna-3.10-py3-none-any.whl.metadata (10 kB)
Collecting urllib3<3,>=1.21.1 (from requests)
  Downloading urllib3-2.3.0-py3-none-any.whl.metadata (6.5 kB)
Collecting certifi>=2017.4.17 (from requests)
  Downloading certifi-2025.1.31-py3-none-any.whl.metadata (2.5 kB)
Collecting colorama (from pytest)
  Downloading colorama-0.4.6-py2.py3-none-any.whl.metadata (17 kB)
Collecting iniconfig (from pytest)
  Downloading iniconfig-2.1.0-py3-none-any.whl.metadata (2.7 kB)
Collecting packaging (from pytest)
  Downloading packaging-24.2-py3-none-any.whl.metadata (3.2 kB)
Collecting pluggy<2,>=1.5 (from pytest)
  Downloading pluggy-1.5.0-py3-none-any.whl.metadata (4.8 kB)
Collecting annotated-types>=0.6.0 (from pydantic!=1.8,!<1.8.1,!<2.0.0,!<2.0.1,!<2.1.0,<3.0.0,>=1.7.4->fastapi)
  Downloading annotated_types-0.7.0-py3-none-any.whl.metadata (15 kB)
Collecting pydantic-core==2.27.2 (from pydantic!=1.8,!<1.8.1,!<2.0.0,!<2.0.1,!<2.1.0,<3.0.0,>=1.7.4->fastapi)
  Downloading pydantic_core-2.27.2-cp313-cp313-win_amd64.whl.metadata (6.7 kB)
Collecting anyio<5,>=3.6.2 (from starlette<0.47.0,>=0.40.0->fastapi)
  Downloading anyio-4.9.0-py3-none-any.whl.metadata (4.7 kB)
Collecting sniffio>=1.1 (from anyio<5,>=3.6.2->starlette<0.47.0,>=0.40.0->fastapi)
  Downloading sniffio-1.3.1-py3-none-any.whl.metadata (3.9 kB)
Downloading fastapi-0.115.12-py3-none-any.whl (95 kB)
Downloading uvicorn-0.34.0-py3-none-any.whl (62 kB)
```

```
Consider adding this directory to PATH or, if you prefer to suppress this warning, use --no-manifest-script-location.
Successfully installed annotated-types-0.7.0 anyio-4.9.0 certifi-2025.1.31 charset-normalizer-3.4.1 click-8.1.8 colorama-0.4.6 fastapi-0.115.12 h11-0.14.0 idna-3.10 iniconfig-2.1.0 packaging-24.2 pluggy-1.5.0 pydantic-2.10.6 pydantic-core-2.27.2 pytest-8.3.5 requests-2.32.3 sniffio-1.3.1 starlette-0.46.1 typing-extensions-4.13.0 urllib3-2.3.0 uvicorn-0.34.0
```

Apiserver.py

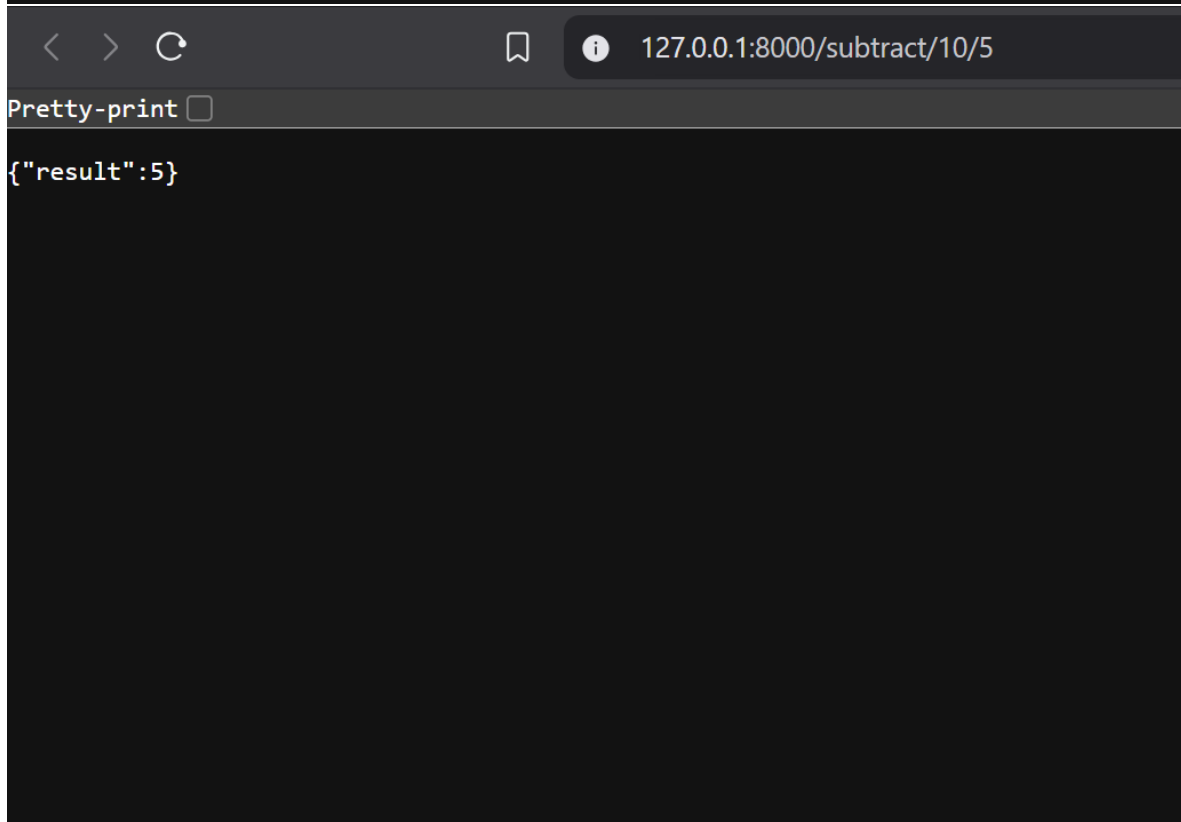
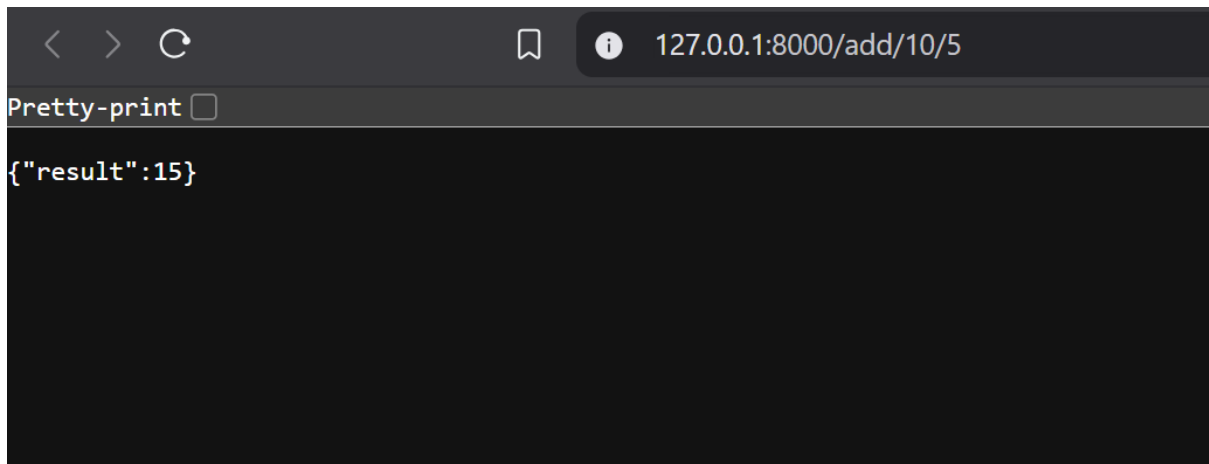
```
C:\College\6th Sem\Devops\Assignment>python apiserver.py
INFO: Will watch for changes in these directories: ['C:\\College\\6th Sem\\Devops\\Assignment']
INFO: Uvicorn running on http://127.0.0.1:8000 (Press CTRL+C to quit)
INFO: Started reloader process [4816] using StatReload
INFO: Started server process [18812]
INFO: Waiting for application startup.
INFO: Application startup complete.
```

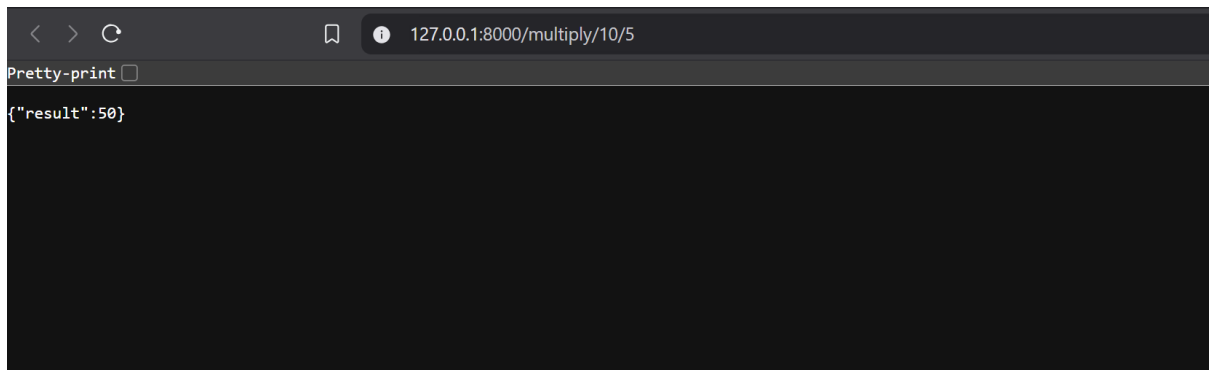
Then we do manual testing by using url.

Addition: <http://127.0.0.1:8000/add/10/5> → Should return {"result": 15}

Subtraction: <http://127.0.0.1:8000/subtract/10/5> → Should return {"result": 5}

Multiplication: <http://127.0.0.1:8000/multiply/10/5> → Should return {"result": 50}





Interactive Documentation:



```
C:\College\6th Sem\Devops\Assignment>python apiserver.py
INFO: Will watch for changes in these directories: ['C:\\College\\6th Sem\\Devops\\Assignment']
INFO: Uvicorn running on http://127.0.0.1:8000 (Press CTRL+C to quit)
INFO: Started reloader process [4816] using StatReload
INFO: Started server process [18812]
INFO: Waiting for application startup.
INFO: Application startup complete.
INFO: 127.0.0.1:53493 - "GET /add/10/5 HTTP/1.1" 200 OK
INFO: 127.0.0.1:53493 - "GET /favicon.ico HTTP/1.1" 404 Not Found
INFO: 127.0.0.1:53508 - "GET /subtract/10/5 HTTP/1.1" 200 OK
INFO: 127.0.0.1:53525 - "GET /multiply/10/5 HTTP/1.1" 200 OK
INFO: 127.0.0.1:53531 - "GET /add/10/5 HTTP/1.1" 200 OK
INFO: 127.0.0.1:53532 - "GET /docs HTTP/1.1" 200 OK
INFO: 127.0.0.1:53532 - "GET /openapi.json HTTP/1.1" 200 OK
WARNING: StatReload detected changes in 'testAutomation.py'. Reloading...
INFO: Shutting down
INFO: Waiting for application shutdown.
INFO: Application shutdown complete.
INFO: Finished server process [18812]
INFO: Started server process [4960]
INFO: Waiting for application startup.
INFO: Application startup complete.
```

Automation:

testAutomation.py

```
testAutomation.py > ...
1  import requests
2
3  # Define test cases
4  testcases = [
5      ("http://127.0.0.1:8000/add/10/5", 15, "Test addition of 10 and 5"),
6      ("http://127.0.0.1:8000/subtract/10/5", 5, "Test subtraction of 10 and 5"),
7      ("http://127.0.0.1:8000/multiply/10/5", 50, "Test multiplication of 10 and 5"),
8      ("http://127.0.0.1:8000/add/-3/3", 0, "Test addition of -3 and 3"),
9      ("http://127.0.0.1:8000/multiply/0/5", 0, "Test multiplication by zero"),
10 ]
11
12 def test_api():
13     """Runs automated tests on API endpoints."""
14     for url, expected, description in testcases:
15         response = requests.get(url)
16         result = response.json()["result"]
17         assert result == expected, f"{description} FAILED! Expected {expected}, got {result}"
18         print(f"{description} PASSED")
19
20     print("\nAll tests passed successfully!")
21
22 # Run the test function
23 if __name__ == "__main__":
24     test_api()
25
```

Running testAutomation.py

```
C:\College\6th Sem\Devops\Assignment>python testAutomation.py
Test addition of 10 and 5 PASSED
Test subtraction of 10 and 5 PASSED
Test multiplication of 10 and 5 PASSED
Test addition of -3 and 3 PASSED
Test multiplication by zero PASSED

All tests passed successfully!
```

Result

```
C:\College\6th Sem\Devops\Assignment>python apiserver.py
INFO: Will watch for changes in these directories: ['C:\\College\\6th Sem\\Devops\\Assignment']
INFO: Uvicorn running on http://127.0.0.1:8000 (Press CTRL+C to quit)
INFO: Started reloader process [8808] using StatReload
INFO: Started server process [10592]
INFO: Waiting for application startup.
INFO: Application startup complete.
INFO: 127.0.0.1:53566 - "GET /add/10/5 HTTP/1.1" 200 OK
INFO: 127.0.0.1:53567 - "GET /subtract/10/5 HTTP/1.1" 200 OK
INFO: 127.0.0.1:53568 - "GET /multiply/10/5 HTTP/1.1" 200 OK
INFO: 127.0.0.1:53569 - "GET /add/-3/3 HTTP/1.1" 200 OK
INFO: 127.0.0.1:53570 - "GET /multiply/0/5 HTTP/1.1" 200 OK
```

Pytest- result

```
C:\College\6th Sem\Devops\Assignment>python -m pytest testAutomation.py -v
===== test session starts =====
platform win32 -- Python 3.13.1, pytest-8.3.5, pluggy-1.5.0 -- C:\Python313\python.exe
cachedir: .pytest_cache
rootdir: C:\College\6th Sem\Devops\Assignment
plugins: anyio-4.9.0
collected 5 items

testAutomation.py::test_api[http://127.0.0.1:8000/add/10/5-15-Addition of 10 and 5] PASSED [ 20%]
testAutomation.py::test_api[http://127.0.0.1:8000/subtract/10/5-5-Subtraction of 10 and 5] PASSED [ 40%]
testAutomation.py::test_api[http://127.0.0.1:8000/multiply/10/5-50-Multiplication of 10 and 5] PASSED [ 60%]
testAutomation.py::test_api[http://127.0.0.1:8000/add/-3/3-0-Addition of -3 and 3] PASSED [ 80%]
testAutomation.py::test_api[http://127.0.0.1:8000/multiply/0/5-0-Multiplication by zero] PASSED [100%]

===== 5 passed in 0.51s =====
```

Using pytest-html

report.html

Report generated on 26-Mar-2025 at 16:52:34 by [pytest-html](#) v4.1.1

Environment

Python	3.13.1
Platform	Windows-11-10.0.26100-SP0
Packages	<ul style="list-style-type: none">• pytest: 8.3.5• pluggy: 1.5.0
Plugins	<ul style="list-style-type: none">• anyio: 4.9.0• html: 4.1.1• metadata: 3.1.1
JAVA_HOME	C:\Program Files\Java\jdk-23

Summary

5 tests took 21 ms.

(Un)check the boxes to filter the results.

☐ 0 Failed

☒ 5 Passed

☐ 0 Skipped

☐ 0 Expected failures

☐ 0 Unexpected passes

☐ 0 Errors

☐ 0 Reruns

[Show all details](#) / [Hide all details](#)

Result	Test	Duration	Links
Passed	testAutomation.py::test_api[http://127.0.0.1:8000/add/10/5-15-Addition of 10 and 5]	8 ms	
Passed	testAutomation.py::test_api[http://127.0.0.1:8000/subtract/10/5-5-Subtraction of 10 and 5]	3 ms	
Passed	testAutomation.py::test_api[http://127.0.0.1:8000/multiply/10/5-50-Multiplication of 10 and 5]	3 ms	
Passed	testAutomation.py::test_api[http://127.0.0.1:8000/add/-3/3-0-Addition of -3 and 3]	3 ms	
Passed	testAutomation.py::test_api[http://127.0.0.1:8000/multiply/0/5-0-Multiplication by zero]	3 ms	