Python Speedtest Short Tutorial

Time required: 45 minutes

- Comment each line of code as shown in the tutorials and other code examples.
- Follow all directions carefully and accurately.
- Think of the directions as minimum requirements.

Speedtest-cli

Speedtest.net that tests the speed and performance of your internet connection. Speedtest is available in many forms, web site, apps, and a Python library located at https://pypi.org/project/speedtest-cli

The **speedtest-cli** Python library provides a command line interface (CLI) for testing internet bandwidth using speedtest.net.

The following tutorials show a development process from research to testing to final product.

Tutorial 1: Research

We want to be able to measure internet bandwidth from a Python program.

1. Google **python speedtest**
2. The first result usually is a CLI application from Speedtest.net. This is the type of program we are looking for. https://www.speedtest.net/apps/cli
3. The next result is usually a Python library, https://pypi.org/project/speedtest-cli/ A step in the right direction. We have found a Python library that wraps speedtest-cli program.
4. Let's look for some tutorials to get a better idea of how this library works. We will search for Python speedtest-cli tutorials or python internet speedtest.
    a. https://www.geeksforgeeks.org/test-internet-speed-using-python/
    b. https://yourblogcoach.com/how-to-test-internet-speed-using-python/
    c. https://pyshark.com/test-internet-speed-using-python/
    d. https://www.codespeedy.com/test-internet-speed-using-python/

Tutorial 2: Speedtest CLI 1

This is the first version after researching tutorials and speed-cli documentation. This version is to make sure the basic methods are working. CLI is command line interface.

Create a Python program named **speedtest_cli_1.py**

```
"""
    Name: speedtest_cli_1.py
    Author: William A Loring
    Created: 12/8/21
    speedtest-cli is a Python module
    that uses speedtest.net to test internet bandwidth
    https://github.com/sivel/speedtest-cli
    https://pypi.org/project/speedtest-cli/
"""

# pip install speedtest-cli
from speedtest import Speedtest

print(" Starting SpeedTest . . . please be patient . . .")

# Create speedtest object
speed = Speedtest(secure=True)

# Get download bandwidth, returns bits per second
download_result = speed.download()

# Get upload bandwidth, returns bits per second
upload_result = speed.upload()

# Get ping results/latency, return ms
ping_result = speed.results.ping

# Display results of speedtest
print(f"\n Download Bandwidth: {download_result}")
print(f"   Upload Bandwidth: {upload_result}")
print(f"     Latency (ping): {ping_result}")
```

There isn't any feedback on this program until the end. Be patient, it can take almost 30 seconds to finish the test.

Example run:

```
Download Bandwidth: 627602969.6985183
Upload Bandwidth: 742244957.0179085
Latency (ping): 16.213
```

Tutorial 3: Speedtest CLI Simple

Copy the last file and rename it as **speedtest_cli_2.py**

Keeping previous versions of programs is helpful if the changes you are making break the program.

This version added conversion to megabits per second and some display additions.

```
"""
    Name: speedtest_cli_2.py
    Author: William A Loring
    Created: 12/8/21
    speedtest-cli is a Python module
    that uses speedtest.net to test internet bandwidth
    https://github.com/sivel/speedtest-cli
    https://pypi.org/project/speedtest-cli/
"""

# speedtest-cli return bandwidth in bits per second
# A megabit is 1 million bits
# Bandwidth is typically measured in megabits per second (mbps)

# pip install speedtest-cli
from speedtest import Speedtest

# Create speedtest object
speed = Speedtest(secure=True)

#---------------------- GET SERVER INFO -------------------------------#
print(" Start SpeedTest . . .")

# Return the nearest test server and location in dictionary format
# A ping test determines the server with the lowest latency
server = speed.get_best_server()

# Get information about nearest server from returned server dictionary
sponsor = f'{server.get("sponsor")}'
location = f'{server.get("name")}'
country_code = f'{server.get("cc")}'

#---------------------- GET DOWNLOAD BANDWIDTH ------------------------#
print(" Get Download Bandwidth . . .")

# Get download bandwidth, returns bits per second
download_result = speed.download()
# Convert from bits per second to megabits per second
# There are 1,000,000 bits per second in 1 megabit per second
download_result = download_result / 1000 / 1000
```

```python
#---------------------- GET UPLOAD BANDWIDTH--------------------------#
print(" Get Upload Bandwidth . . .")

# Get upload bandwidth, returns bits per second
upload_result = speed.upload()
# Convert from bits per second to megabits per second
# There are 1,000,000 bits per second in 1 megabit per second
upload_result = upload_result / 1000 / 1000

#-------------------- GET PING LATENCY --------------------------------#
print(" Get Ping Latency . . .")

# Get ping results/latency, return ms
ping_result = speed.results.ping

#---------------- DISPLAY SPEEDTEST RESULTS ----------------------------#
print(f"\n {sponsor} - {location}, {country_code}")
print(f" Download Bandwidth: {download_result:.2f} Mbps")
print(f"   Upload Bandwidth: {upload_result:.2f} Mbps")
print(f"     Latency (ping): {ping_result} ms")

input("\n Press Enter to exit")
```

Example run:

```
Start SpeedTest . . .
Get Download Bandwidth . . .
Get Upload Bandwidth . . .
Get Ping Latency . . .

Viaero Wireless - Fort Morgan, CO, US
Download Bandwidth: 565.36 Mbps
  Upload Bandwidth: 258.20 Mbps
    Latency (ping): 11.313 ms
```

Assignment Submission

1. Attach the program files.
2. Attach screenshots showing the successful operation of the program.
3. Submit in Blackboard.