

# **NITTE MEENAKSHI INSTITUTE OF TECHNOLOGY**

(AN AUTONOMOUS INSTITUTION, AFFILIATED TO VISVESVARAYA TECHNOLOGICAL UNIVERSITY,  
BELGAUM, APPROVED BY AICTE & GOVT.OF KARNATAKA)



KNOWLEDGE \* CHARACTER \* UNITY

## **PROJECT REPORT**

on

**Finding the server with best internet speed around us**

*Submitted in partial fulfilment of the requirement for the award of Degree of*

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*in*

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## INTRODUCTION:

Internet speed test of a server refers to the process of measuring the download and upload speeds, as well as the latency (ping) between a client and a specific server on the internet. This test helps evaluate the performance and quality of the network connection to that particular server.

### **Here's a brief introduction to the key components of an internet speed test:**

**Download Speed:** It measures the rate at which data can be downloaded from the server to the client. It indicates how quickly files, web pages, videos, or other content can be retrieved from the server.

**Upload Speed:** It measures the rate at which data can be uploaded from the client to the server. It represents the speed at which files, images, videos, or other data can be sent to the server.

**Latency (Ping):** It measures the round-trip time it takes for a small packet of data to travel between the client and the server. It indicates the responsiveness and delay between the client's request and the server's response.

### **Internet speed tests are commonly used to:**

Assess the performance of an internet connection to a specific server or website.

Troubleshoot network issues by identifying slow or unreliable connections.

Compare different internet service providers (ISPs) or server locations.

Determine if the network speed meets the requirements for specific applications like video streaming, online gaming, or large file transfers.

Various tools and services are available to perform internet speed tests, including online speed test websites, command-line tools, and programming libraries like speedtest-cli or speedtest.net API.

By conducting internet speed tests, users can gain insights into the network performance and make informed decisions regarding their internet service provider, server selection, or network optimizations.

## **How to install vscode:**

### **Download VS Code:**

Go to the official VS Code website (<https://code.visualstudio.com/>).

Click on the "Download" button to download the installer appropriate for your operating system (Windows, macOS, or Linux).

### **Run the Installer:**

Locate the downloaded installer file and run it.

Follow the on-screen instructions to proceed with the installation.

### **Choose Installation Options:**

During the installation process, you may have the option to choose additional components or modify the installation location. Adjust these options as desired or keep the defaults.

### **Launch VS Code:**

Once the installation is complete, you can launch VS Code.

The first launch might take a bit longer as VS Code initializes and installs some additional components.

### **Extensions and Marketplace:**

VS Code provides a rich ecosystem of extensions to enhance its functionality.

Explore the Extensions view in VS Code by clicking on the square icon on the left sidebar or using the shortcut 'Ctrl+Shift+X' (Windows/Linux) or 'Cmd+Shift+X' (macOS).

Search for extensions and install those that you find useful or necessary for your development workflow.

## **Configuration and Customization:**

Customize VS Code according to your preferences.

Access the settings by clicking on the gear icon in the lower-left corner of the sidebar or using the shortcut 'Ctrl+', (Windows/Linux) or 'Cmd+', (macOS).

Explore the settings and adjust them to your liking.

## **How to install python exe file:**

### **Download Python Installer:**

Go to the official Python website (<https://www.python.org/downloads>).

Choose the Python version that you want to install (e.g., Python 3.9).

Select the appropriate installer for your operating system (Windows, macOS, or Linux).

### **Run the Installer:**

Locate the downloaded Python installer file (.exe).

Double-click on the installer to run it.

### **Configure Installation Options:**

Review the installation options presented by the installer.

Choose the desired options or stick with the default settings.

Make sure the option to "Add Python to PATH" is checked to enable running Python from the command prompt or terminal.

### **Start the Installation:**

Click on the "Install Now" or similar button to start the installation process.

Provide administrative privileges if prompted.

### **Wait for Installation Completion:**

The installer will extract and install Python along with the selected components.

Wait for the installation process to complete, which may take a few minutes.

### **Verify the Installation:**

Open a command prompt or terminal.

Run the command `python --version` to check the installed Python version.

If the installation was successful, the Python version will be displayed.

That's it! Following these steps will help you install Python using the executable (exe) file. After installation, you can use Python for various programming tasks, execute Python scripts, and install additional packages using pip.

## **How to link python extension to vscode:**

**To link the Python extension to Visual Studio Code (VS Code), follow these steps:**

**Open VS Code:** Launch Visual Studio Code on your computer.

**Open Extensions View:** Click on the square icon on the left sidebar or press 'Ctrl+Shift+X' (Windows/Linux) or 'Cmd+Shift+X' (macOS) to open the Extensions view.

**Search for the Python Extension:** In the Extensions view, type "Python" in the search bar.

**Select the Python Extension:** From the search results, locate the "Python" extension by Microsoft and click on it.

**Install the Extension:** On the extension details page, click the "Install" button to install the Python extension. Wait for the installation process to complete.

**Restart VS Code:** After the extension is installed, you'll see a "Reload" button. Click on it to restart VS Code and activate the Python extension.

**Verify the Extension:** Once VS Code restarts, you can verify that the Python extension is linked properly:

Look for the Python logo in the activity bar on the left-hand side. Check if you have access to the Python extension features such as IntelliSense, code formatting, debugging, and running Python scripts.

## **How to create a python file in vscode:**

**Open VS Code:** Launch Visual Studio Code on your computer.

**Go to File Menu:** Click on the File menu option in the menu bar at the top.

**Select New File:** Choose the New File option from the File menu. This will open a new blank file in the editor.

**Set File Extension:** Save the file with a '.py' extension. This is the standard extension for Python files.

**Choose Location:** Select the folder or directory where you want to save the Python file. You can choose an existing folder or create a new one.

**Provide File Name:** Enter a name for your Python file, making sure to include the '.py' extension at the end.

**Save the File:** Click on the Save button in the upper-left corner of the VS Code window, or use the File > Save option from the menu. Alternatively, use the shortcut 'Ctrl+S' (Windows/Linux) or 'Cmd+S' (macOS) to save the file.

**Start Writing Code:** The newly created Python file will open in the VS Code editor. You can begin writing your Python code in this file.

## **How to intall " Speed test " library:**

**Open Terminal or Command Prompt:** Launch the terminal or command prompt on your computer.

**Check Python Version:** Run the command 'python --version' to check the installed Python version. Ensure that Python is installed and the correct version is displayed.

**Install via pip:** Run the command 'pip install speedtest-cli' to install the speedtest library. The speedtest-cli package provides the functionality for performing internet speed tests.

**Wait for Installation:** Wait for the installation process to complete. You'll see the progress of the installation in the terminal.

**Verify Installation:** After the installation is finished, run the following command to verify that the library is installed correctly:

```
'speedtest-cli --version'
```

If the installation was successful, the version number of the speedtest-cli package will be displayed.

If you encounter any errors, ensure that Python and pip are properly installed and accessible in your system's PATH.

That's it! You have successfully installed the speedtest library in Python using pip.

### **Write the below code on the python file:**

```
import speedtest # Imported speed test library
```

```
test = speedtest.Speedtest()
```

```
print('Loading server list....')
```

```
test.get_servers() # -> get a list of servers
```

```
print('Choosing best server....')
```

```
best = test.get_best_server() # -> Choose best server
```

```
print(f'Found: {best['host']} located in {best['name']} of {best['country']}')
```

```
print("Performing download test....")
```

```
download_result = test.download() # -> Perform Download test
```

```
print("Performing upload test....")
```

```
upload_result = test.upload() # -> Perform Upload test
```

```
ping_result = test.results.ping # -> Ping result found
```

```
print(f'Download speed: {download_result/1024/1024:.2f} mbps") # Converted download speed bits/sec to megabits/sec
```

```
print(f'upload speed: {upload_result/1024/1024:.2f} mbps") # Converted upload speed speed bits/sec to megabits/sec
```

```
print(f'ping: {ping_result:.2f} ms') # Ping result in milli sec
```

### **Code explanation:**

**Import the necessary module:** The speedtest module is imported to perform network speed tests.

**Create a Speedtest object:** An instance of the Speedtest class is created using the 'speedtest.Speedtest()' constructor. This object will be used to conduct the speed tests.

**Load server list:** The 'get\_servers()' method is called to retrieve a list of available servers for testing.

**Choose the best server:** The 'get\_best\_server()' method is used to select the best server based on various criteria like latency. The result is stored in the 'best' variable.

**Print server information:** The server information, including its host, sponsor, name, and country, is printed using string formatting.

**Perform download test:** The 'download()' method is called to measure the download speed. The result is stored in the 'download\_result' variable.

**Perform upload test:** The 'upload()' method is called to measure the upload speed. The result is stored in the 'upload\_result' variable.

**Measure ping:** The ping attribute of the results object is accessed to get the measured ping value.

**Print results:** The measured download speed, upload speed, and ping are printed using string formatting.

### **Result:**

Here for every execution we will get the different output. This is because for every instance of time the server with best internet speed may be different.

But the output follows the syntax as below:

ie,

Loading server list....

Choosing best server....

Found: <host> sponsored by <sponsor> located in <name> of <country>



Performing download test....

Performing upload test....

Download speed: <download\_speed> mbps

Upload speed: <upload\_speed> mbps

Ping: <ping\_value> ms

In the output, <host> represents the server host, <sponsor> represents the sponsor of the server, <name> represents the server name, and <country> represents the country where the server is located. <download\_speed>, <upload\_speed>, and <ping\_value> will be replaced with the actual measured values for the download speed, upload speed, and ping respectively.

Example:-

Output 1:

```
Loading server list....
Choosing best server....

Found: speed1.blss.in:8080 sponsor by Blue Lotus Support Services Pvt Ltd located in Bangalore of India
Performing download test....
Performing upload test....
Download speed: 86.52 mbps
upload speed: 116.31 mbps
ping: 25.68 ms
PS C:\Users\chida\OneDrive\Desktop\Chidananda> █
```

Output 2:

```
Loading server list....
```

```
Choosing best server....
```

```
Found: speedbgl1.jioconnect.com:8080 sponsor by Jio located in Bangalore of India
```

```
Performing download test....
```

```
Performing upload test....
```

```
Download speed: 112.10 mbps
```

```
upload speed: 122.42 mbps
```

```
ping: 20.94 ms
```

## **Conclusion:**

Therefore by this project we can able to internet speed components like

Download speed, Upload speed, latency of the best server among a list of servers around us at a particular time , also found the some accurate location of the server lies using a Python language

