

# INSTALLATION OF PYTHON

Python can be installed in Windows and UNIX operating systems. In both these operating systems installations can be done either directly downloading Python from <https://www.python.org/> or using package manager Anaconda (<https://www.anaconda.com/>).

## 1. Windows

### METHOD 1:

Download the latest version of Python from the official website of Python <https://www.python.org/> for Windows. After downloading the latest version, double click on the Python setup installer. Two installation methods are possible in it: '*Install Now*' and '*Customize installation*'. The first method will install Python on the windows automated location. For installing Python in a user-specified path one can use second method. In both methods the progress of the setup will be shown and at the end a '*Setup was successful*' message will be displayed. In both the methods check the box showing '*Add Python to PATH*' to add Python to the PATH list.

To ensure that Python is successfully installed open the command prompt, type '*python*' and press enter. The version of the python installed will be displayed if the installation was successful. Once Python is installed you can start writing Python scripts in a notepad and save it with '.py' extension. One can run the python script by typing *python file\_name.py* in command prompt. Along with that one has to make sure that the package manager '*pip*' is also installed successfully. To check that in the command prompt type '*pip -V*' or '*pip --version*' and press enter. This will show the version of pip that is installed.

For the installation of additional modules and packages one can use the '*pip*' (*pip3* for Python3) package manager. You can use the command '*pip install Package\_name*' or '*pip install Package\_name=version*' for some specific version. Sometimes, especially on Windows, you may find it helpful to use the -m flag (to help python find the pip module), like '*python -m pip install Package\_name*'.

### METHOD 2:

One of the widely used methods for the installation of Python is by using the package manager Anaconda (<https://www.anaconda.com/>). Anaconda is a package manager, an environment manager, a Python and R data science distribution and a collection of over 7500

open source packages. The Anaconda installer can be downloaded from the official website mentioned above and launch the installer. By accepting the license and choosing a destination folder for the installation, anaconda can be installed. Before installation choose whether to add Anaconda to your PATH environment variable. It is recommended not to add Anaconda to the PATH environment variable, since this can interfere with other software. Instead, use Anaconda software by opening Anaconda Navigator or the Anaconda Prompt from the Start Menu. For the installation of additional packages use Anaconda Navigator, if you prefer graphical interface. Otherwise open Anaconda prompt and type '*conda install package\_name*' in the prompt. For running a python (.py) script we can use Anaconda prompt and type '*python file\_name.py*'. In the Anaconda Navigator other additional softwares are available, few of them being editors such as '*jupyter lab*', '*jupyter notebook*' and '*Spyder*'. These are all editors along with Python compilers that enables line by line code compilation also. Any of them could be launched by making use of the '*Launch*' button in the Navigator.

### METHOD 3:

#### Windows Subsystem for Linux (WSL)

For those who prefer to work in Unix environment without actually installing Ubuntu, WSL is a good option. The Windows Subsystem for Linux (<https://docs.microsoft.com/en-us/windows/wsl/install>) lets developers run a GNU/Linux environment -- including most command-line tools, utilities, and applications -- directly on Windows, unmodified, without the overhead of a traditional virtual machine or dual boot setup. For activating the WSL, go to control panel, navigate to the "*Turn Windows Features On or Off*" window and in the list of features turn on Windows Subsystem for Linux and click Ok. Restart the PC for the changes to be applied. Now in the search option by typing 'WSL' you can find the subsystem. Next go to Windows Store and search Linux. From the list choose 'Ubuntu' and click Launch. You have to wait till all the necessary additional files get installed. After this you have to create your UNIX Username and Password in the window that appears.

Opening WSL will give you a Linux based terminal which works in the same way as Unix distribution. Type '*pwd*' to find out your home directory. From this terminal you can access the windows drive also. Type '*cd ../../*' and '*ls*', you will find the root directory of linux. In that you have to find '*mnt*' directory inside which you can find your Windows drives. To install Python in WSL follow any one method in the next section.

After installing Python add the path of Python in *.bashrc* file as

```
export PATH="$PATH:/home/your_linux_username/.local/bin"
```

## 2. UNIX DISTRIBUTIONS

In Unix distributions Python now come as a pre-installed script. To check whether Python is already installed or not, go to terminal (Ctrl+Alt+T) and type 'python' in the command line. If the Python version is displayed, that means python is already installed in it. If needed, one can install latest version of Python by following one of the below methods.

### METHOD1: Using apt package manager

The "Apt" term is known as the Advanced Package Tool. It serves as the default package manager that you can have available on your Ubuntu system. So, the official Ubuntu repository lets you easily download the Python package. First, you need to update your local system's repository list. For that in the terminal execute the command '*sudo apt-get update*' and then execute '*sudo apt-get install python2*' or '*sudo apt-get install python3*' for installing the respective version.

### METHOD 2: Installation from source code

Python can be installed by downloading the source code from the official website and by compiling it. Here also, first you have to update the local repository list by executing the command '*sudo apt-get update*'. Then, you have to install supporting dependencies on your system with Apt using the following command:

```
sudo apt-get install build-essential zlib1g-dev libncurses5-dev libgdbm-dev libnss3-dev  
libssl-dev libreadline-dev libffi-dev wget
```

Further, create a new directory for storing the Python source files:

```
mkdir /python && cd /python
```

Then download the Python source code from the official FTP server, extract the file, configure and then install Python by following the steps given below:

```
wget https://www.python.org/ftp/python/3.9.1/Python-3.9.1.tgz  
tar -xvf Python-3.9.1.tgz  
cd Python-3.9.1  
./configure --enable-optimizations  
sudo make install
```

To check whether Python has been installed properly type `'python3 --version'` for Python3 or `'python --version'` for Python2. Also note that you have to install `'pip'` package manager to employ additional packages and modules. Ubuntu 18.04 has both Python 2 and Python 3 installed by default and hence it has two possible variants of pip for each Python versions. Pip, by default, refers to the Python 2 version. Pip for Python 3 is referred to as pip3. Python 2 is deprecated and not available in Ubuntu 20.04 and higher versions. You can only install pip3. In Ubuntu 18.04 check which version of Python is installed and then install pip as `'sudo apt install python3-pip'`. If you really need to install pip for python2 for some reason, make sure python2 is installed in your Ubuntu version and then execute the command `'sudo apt install python-pip'`. This will install pip along with other dependencies and to check whether pip has been installed properly type `'pip --version'` or `'pip3 --version'` accordingly.

### 3. Using Anaconda in Windows Subsystem for Linux and Unix distribution

Python can be installed in Windows subsystem for Linux and Unix distributions by using Anaconda also. In both these you have to first install Anaconda's latest version for Linux. First go to the directory where you have to install anaconda and download anaconda for linux using `wget`. Go to the following link: <https://www.anaconda.com/products/individual>. On the downloads page, select the Linux operating system and copy the bash (.sh) installer link and go to terminal and type the following.

```
cd ~  
mkdir tmp  
cd tmp  
wget https://repo.continuum.io/archive/Anaconda3<release>.sh
```

Run the installer script with bash.

```
bash Anaconda3-5.2.0-Linux-x86_64.sh
```

Accept the Licence Agreement and allow Anaconda to be added to your PATH. By adding Anaconda to your PATH, the Anaconda distribution of Python will be called when you type `'python'` in a terminal. Now that Anaconda3 is installed and Anaconda3 is added to our PATH, source the `.bashrc` file to load the new PATH environment variable into the current terminal session. Note the `.bashrc` file is in the home directory. You can see it with `'ls -a'`.

```
cd ~  
source .bashrc
```

To verify the installation is complete, open Python from the command line as `'python'`. If you see Python 3.6 from Anaconda listed, your installation is complete. To exit the Python, type `'exit()'`. For the installation of additional packages and modules you can use `'conda install package_name'`.

For using the jupyter notebook editor install it using conda as `'conda install -c conda-forge notebook'`. Now in the `.bashrc` file add a line `alias jupyter-notebook="~/local/bin/jupyter-notebook --no-browser"` and save `.bashrc`. Update bashrc by `'source .bashrc'`. Now when you type `jupyter notebook` in the terminal it will give you a link for local host, copy the link and paste it in any browser you want, you can use jupyter notebook. Apart from that you can use any other editors in Linux as `vim`, `gedit` or `nedit`.

Now you are ready to run Python in Windows or Unix distributions.