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Introduction To Python Programming

What is Python?

Python is a popular programming language. It was created by Guido van Rossum, and released in 1991.

What can Python do?

- Python can be used on a server to create web applications.
- Python can be used alongside software to create workflows.
- Python can connect to database systems. It can also read and modify files.
- Python can be used to handle big data and perform complex mathematics.
- Python can be used for rapid prototyping, or for production-ready software development.

Why Python?

- Python works on different platforms (Windows, Mac, Linux, Raspberry Pi, etc).
- Python has a simple syntax similar to the English language.
- Python has syntax that allows developers to write programs with fewer lines than some other programming languages.
- Python runs on an interpreter system, meaning that code can be executed as soon as it is written. This means that prototyping can be very quick.
- Python can be treated in a procedural way, an object-oriented way or a functional way.

Good to know

The most recent major version of Python is Python 3, which we shall be using. However, Python 2, although not being updated with anything other than security updates, is still quite popular. It is possible to write Python in an Integrated Development Environment, such as Thonny, Pycharm, Netbeans or Eclipse which are particularly useful when managing larger collections of Python files. In our case we will be using Pycharm and Anaconda as our IDE

Python Install

Many PCs and Macs will have python already installed.

To check if you have python installed on a Windows PC, search in the start bar for Python or run the following on the Command Line (`cmd.exe`):

```
C:\Users\Your Name>python --version
```

To check if you have python installed on a Linux or Mac, then on linux open the command line or on Mac open the Terminal and type:

```
python --version
```

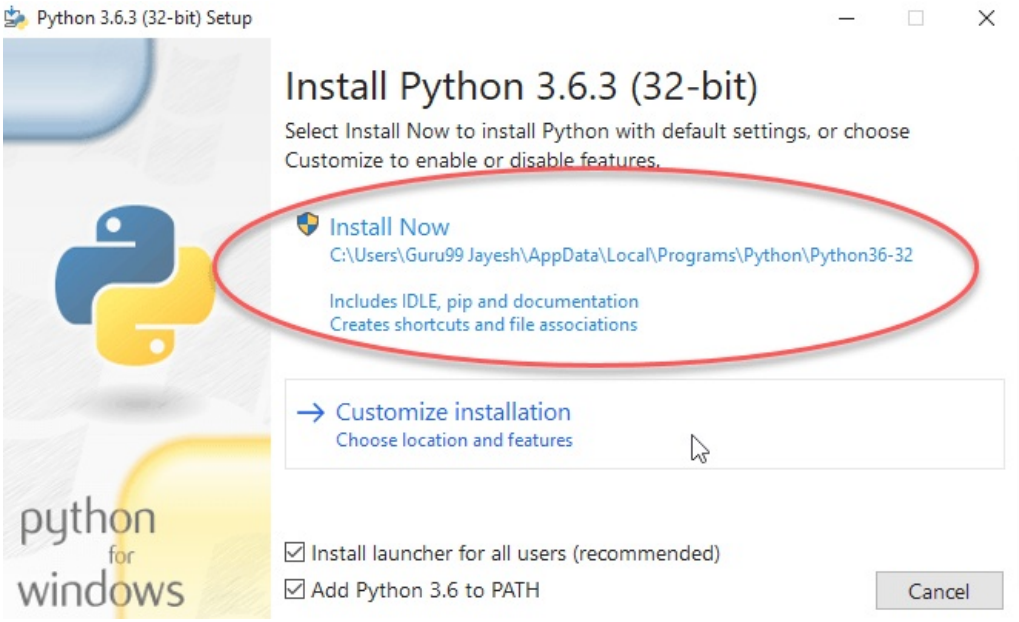
If you find that you do not have Python installed on your computer, then you can download it for free from the following website: https://www.python.org/

Install Python on Windows [Pycharm IDE]

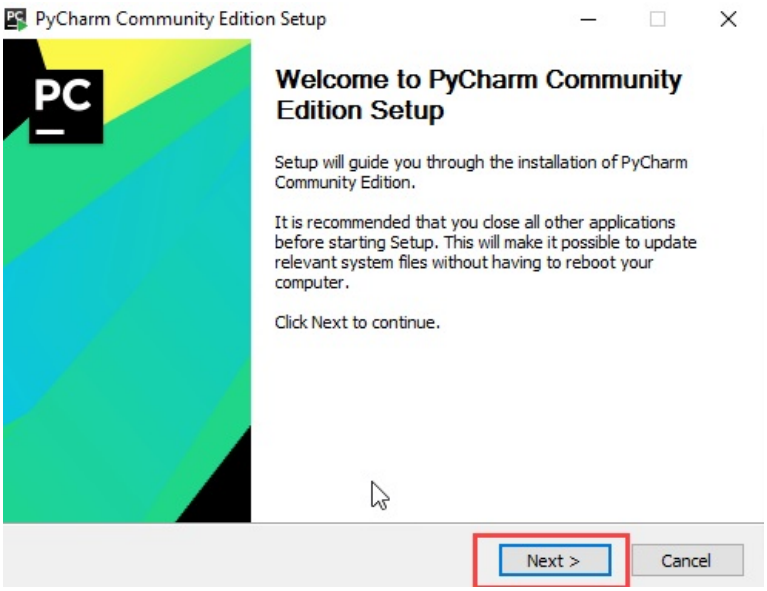
PyCharm is a cross-platform editor developed by JetBrains. Pycharm provides all the tools you need for productive Python development.

1. To download and install Python, visit the official website of Python https://www.python.org/downloads/ and choose your version. We have chosen Python version 3.6.3

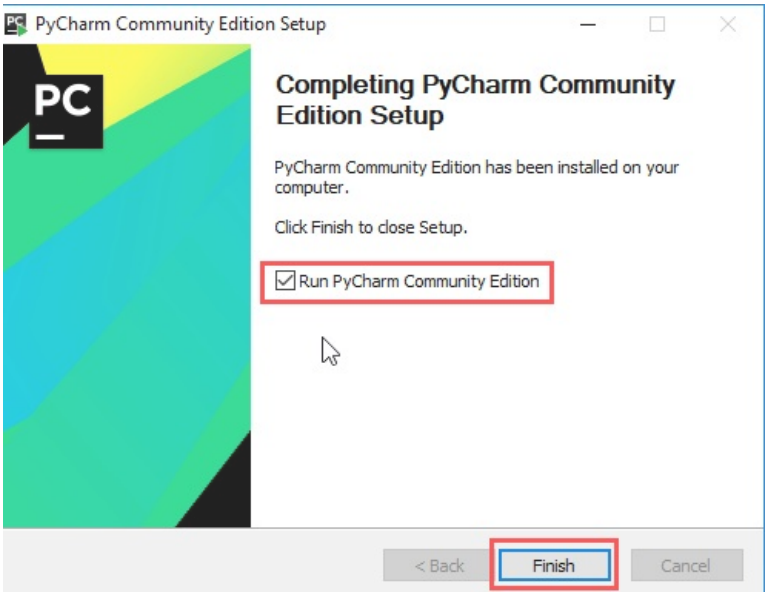
2.Once the download is completed, run the .exe file to install Python. Now click on Install Now.



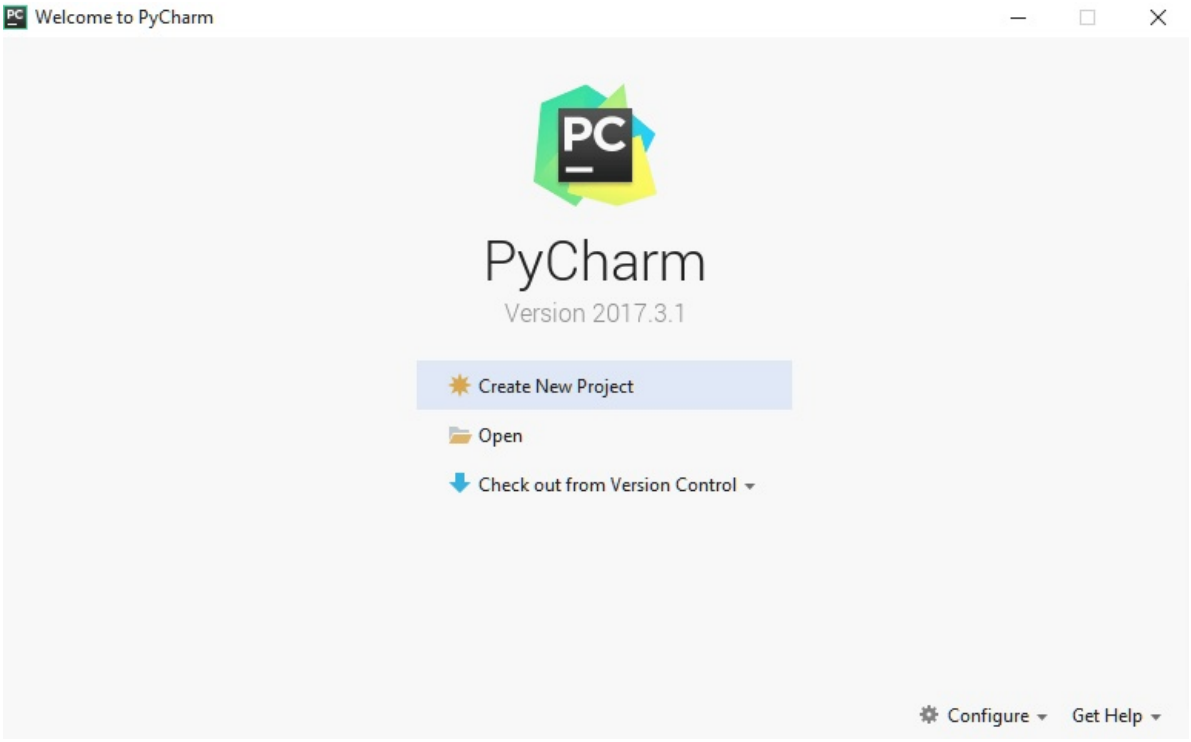
1. Once the download is complete, run the exe for install PyCharm. The setup wizard should have started. Click “Next”.



1. Proceed with the DEFAULT installation. Once installation finished, you should receive a message screen that PyCharm is installed. If you want to go ahead and run it, click the “Run PyCharm Community Edition” box first and click “Finish”.



After you click on “Finish,” the Following screen will appear.

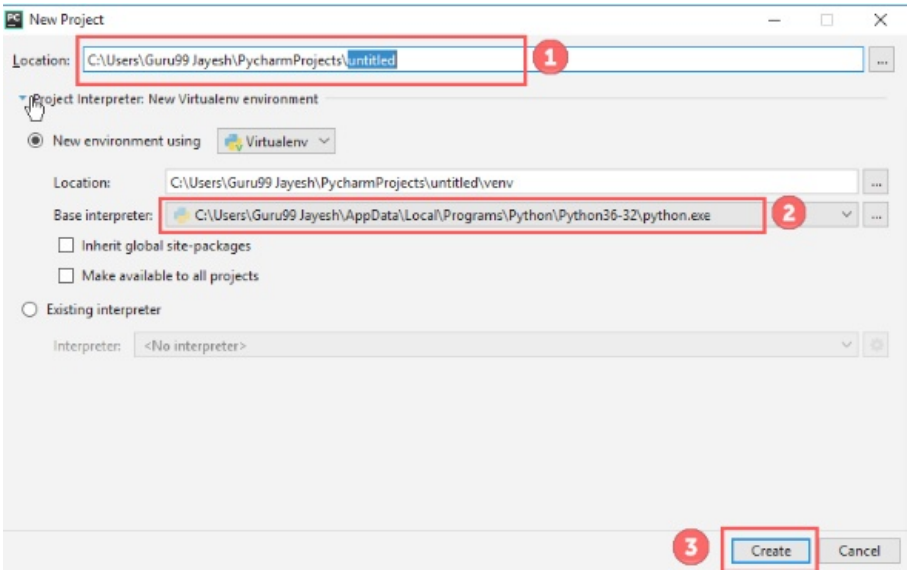


Create your First Python Program

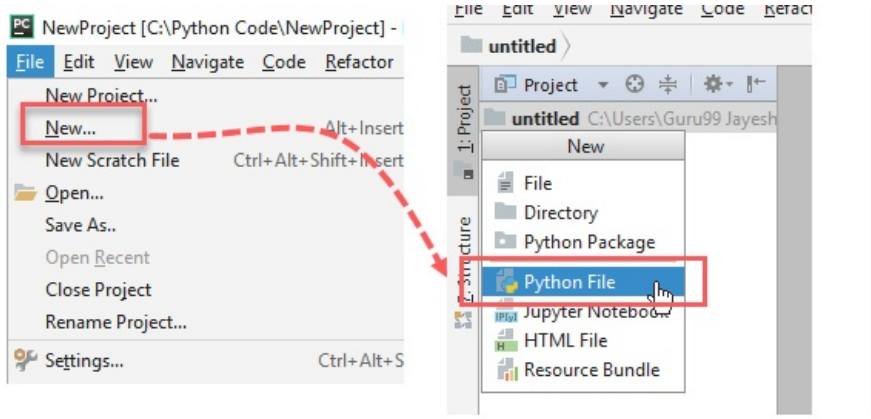
To create a new project, click on “Create New Project”. On the introductory screen of the Pycharm

```
You will need to select a location.
```

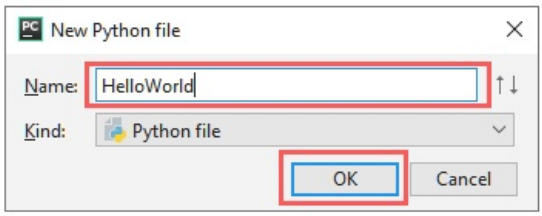
1. You can select the location where you want the project to be created. If you don’t want to change location than keep it as it is but at least change the name from “untitled” to something more meaningful, like “FirstProject”.
2. PyCharm should have found the Python interpreter you installed earlier.
3. Next Click the “Create” Button.



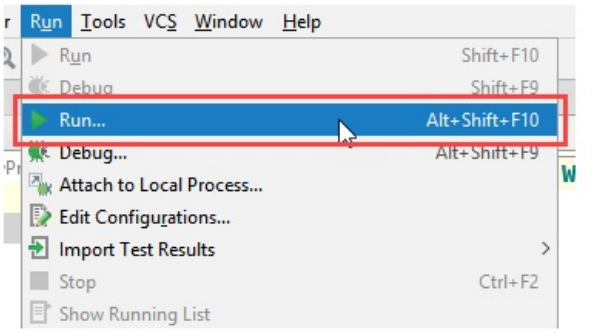
1. Now Go up to the “File” menu and select “New”. Next, select “Python File”.



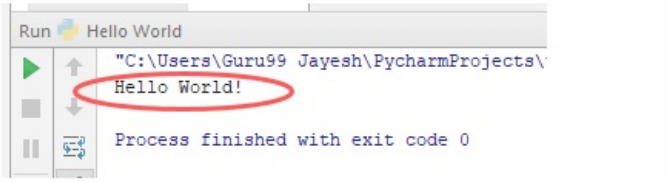
A new pop up will appear. Now type the name of the file you want (Here we give “HelloWorld”) and hit “OK”.



Now Go up to the “Run” menu and select “Run” to run your program.



You can see the output of your program at the bottom of the screen.



Windows CMD Command

What Is CMD

CMD stands for Command (.CMD). A command is an instruction given to a computer program that tells the program what has to be done. It is an application that is found in most computers with Windows as the Operating System, and it helps in the execution of the commands entered. It is also called Command Prompt or Windows Command Processor.

Why Is Command Prompt Useful

Command prompt has become increasingly popular with people having no background in IT as it helps to automate several tedious, mundane tasks with the help of a few clicks. The interface allows the user to run multiple commands, and the commands can be executed one after the other. This has proved a boon in the world of automation.

Most users find it difficult to learn and cannot use Command prompt as compared to the user-friendly interface that is available on the modern apps, however, Command prompt can still be used in many situations.

How To Open CMD In Windows

Opening Command Prompt in the Windows Operating System is as simple as a few clicks.

1. Go to the Start Menu. This is at the bottom left of the screen. RUN.
2. Type cmd in the search bar and hit Enter. The ones who love shortcuts in Windows can also use Ctrl+R which routes them to RUN, and then they can search for cmd and hit enter. The best thing about these commands in Windows is that they are not case sensitive, which makes it user friendly.

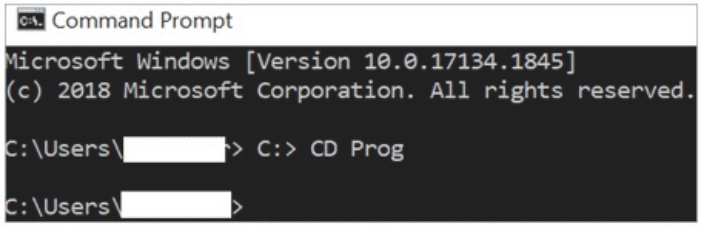
Basic CMD Commands

1. CD- Change Directory

This command allows users to change from one directory to another or move from one folder to another.

Syntax: `CD [/D] [drive:][path]`

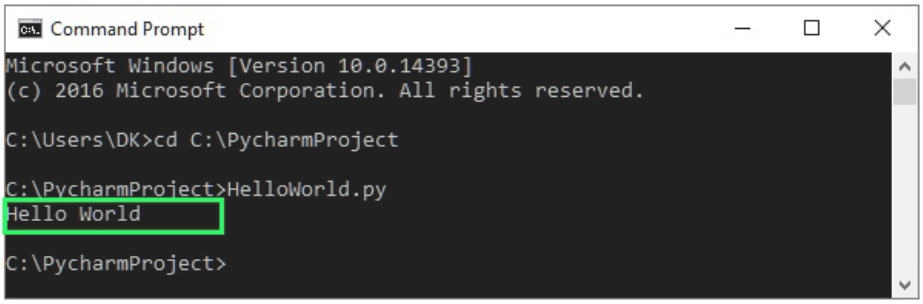
Example: `C:>CD Prog`



The Python Command Line

if you don't have Pycharm Editor installed, you can still run the code from the command prompt. Enter the correct path of a file in command prompt to run the program.

The output of the code would be



The Python Command Line

To test a short amount of code in python sometimes it is quickest and easiest not to write the code in a file. This is made possible because Python can be run as a command line itself.

Type the following on the Windows, Mac or Linux command line:

```
C:\Users\Your Name>python
```

Or, if the `python` command did not work, you can try `py`:

```
C:\Users\Your Name>py
```

From there you can write any python:

```
C:\Users\Your Name>python
Python 3.6.4 (v3.6.4:d48eceb, Dec 19 2017, 06:04:45) [MSC v.1900 32 bit (Intel)] on win32
Type "help", "copyright", "credits" or "license" for more information.
>>> print("Hello, World!")
Hello, World!
```

Whenever you are done in the python command line, you can simply type the following to quit the python command line interface:
`exit()`

Python IDLE

What Is Python IDLE?

Every Python installation comes with an Integrated Development and Learning Environment, which you'll see shortened to IDLE or even IDE. These are a class of applications that help you write code more efficiently. While there are many IDEs for you to choose from, Python IDLE is very bare-bones, which makes it the perfect tool for a beginning programmer.

Python IDLE comes included in Python installations on Windows and Mac. If you're a Linux user, then you should be able to find and download Python IDLE using your package manager. Once you've installed it, you can then use Python IDLE as an interactive interpreter or as a file editor.

How to Use the Python IDLE Shell

The shell is the default mode of operation for Python IDLE. When you click on the icon to open the program, the shell is the first thing that you see:

This is a blank Python interpreter window. You can use it to start interacting with Python immediately. You can test it out with a short line of code:

In [ ]:

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