

Python Fundamentals Part 01

Duration: 4 days (06, 13, 20, 27 February 2021)

Time: 9am to 12pm

Level: Introduction

Delivery Method: Virtual ILT

Training Credits: N/A

Google Classroom code: uzh2vwt

Python Fundamentals 1

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1 Introduction

In this Python training course, students learn to program in Python. The course is aimed at students new to the language who may or may not have experience with other programming languages. This Python course is taught using Python 3; however, differences between Python 2 and Python 3 are noted.

2 Target Audience

This course is intended for students who would like to learn Python programming and may or may not have programming experience.

3 Prerequisites

Before attending this course, students must have:

- Laptop / Desktop
- Internet Connection (The class will be 3 to 4 hours long)
- Basic computer Literacy Skills
- Some programming experience (recommended but not compulsory)
- Python (Installation steps below)
- PyCharm (Installation steps below)

4 Course Objectives

After completing this course, students will be able to:

- Learn how Python works and what it is good for
- Understand Python's place in the world of programming languages
- Learn to work with and manipulate strings in Python
- Learn to perform math operations with Python
- Learn to work with Python sequences: lists, arrays, dictionaries, and sets
- Learn to collect user input and output results
- Learn flow control processing in Python
- Learn to write to and read from files using Python
- Learn to write functions in Python
- Learn to handle exceptions in Python
- Learn to work with dates and times in Python

5 Course Content

- Module 01: Python Introduction
- Module 02: Python Lists
- Module 03: Python Dictionaries
- Module 04: Python Functions
- Module 05: Debugging and Modules

6 Associated Certification & Exam

This course prepares students to write Exam 98-381: Introduction to Programming Using Python.

On successful completion of this course, students will receive an LTT Tech Solutions IT attendance certificate.

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6 How to Install Python

Before getting into the installation part, let's first look at Python as a programming language and why it's used mostly in the current technical eco-space.

7 What is Python?

Python is the fastest-growing multi-purpose programming language not just amongst Software Engineers, but also amongst Mathematicians, Data Analysts, Data Scientists, Accountants, Network Engineers, and even kids because it is a very beginner-friendly programming language.

8 Why should one learn Python?



- Python is used by people from various disciplines to perform multiple tasks like Data Analysis, Data Visualization, Artificial Intelligence, Machine Learning, and Automation. This is one of the significant uses of Python amongst people who are not software developers.
- A lot of the time, we do kinds of stuff which are repetitive and boring. It often creates a resource and budget constraints for companies who propose to automate the process to ensure the fluidity of the business. Python could be used to automate those tasks like copying files and folders around, renaming them, uploading them to the servers, etc.
- Most companies have to work continuously with Excel spreadsheets, PDF's, CSV files, download websites, and parse them. All of these activities, however, could be automated using Python as well.
- Python is used to build web, mobile, and desktop applications as well as software testing and even hacking which further justifies its multi-purpose functionality.

Now, questions could be raised that these above activities could be done with other languages as well. So why Python?



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Fewer lines of code

Python can solve complex problems in less time and with fewer lines of code. Let's say, for example, we want to extract the first three letters of the text "Hello World" stored in variable 'str.' Below is how we would write in different languages.

- **C# – str.Substring(0,3)**
- **Javascript – str.substr(0, 3)**
- **Python – str[0:3]**

As we can see, python is short and clean to use.

High-Level language

Python is a high-level language, so we do not have to worry about complex tasks such as memory management, as you do in C++.

Cross-Platform

It is a cross-platform language which means we can build and run Python applications on Windows, Mac, and Linux.

Huge Community

Python has a large community, so whenever we get stuck, there is always someone out there to help.

Large Ecosystem

This is called the snowball effect. As more companies use Python, the more resources there are for it. Python has a whole host of libraries, frameworks, and tools which means whatever we want to do; it's more likely that someone else might have already done it before as the language has been around for over 20 years.

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9 Steps To Install Python

So far, we have discussed a bit of Python's history, its applications, and its popularity in today's world, but now comes the part that we all have been waiting for. Time to get our hands dirty and install python.

The installation process of python will have two parts:

Downloading and Installing Python for windows from the official website

Installing an IDE (We will use PyCharm)

Part 1: Downloading and Installing Python from the official website

Visit the official website and go to <https://www.python.org/downloads/>

Click the Download Python 3.9.1 button.



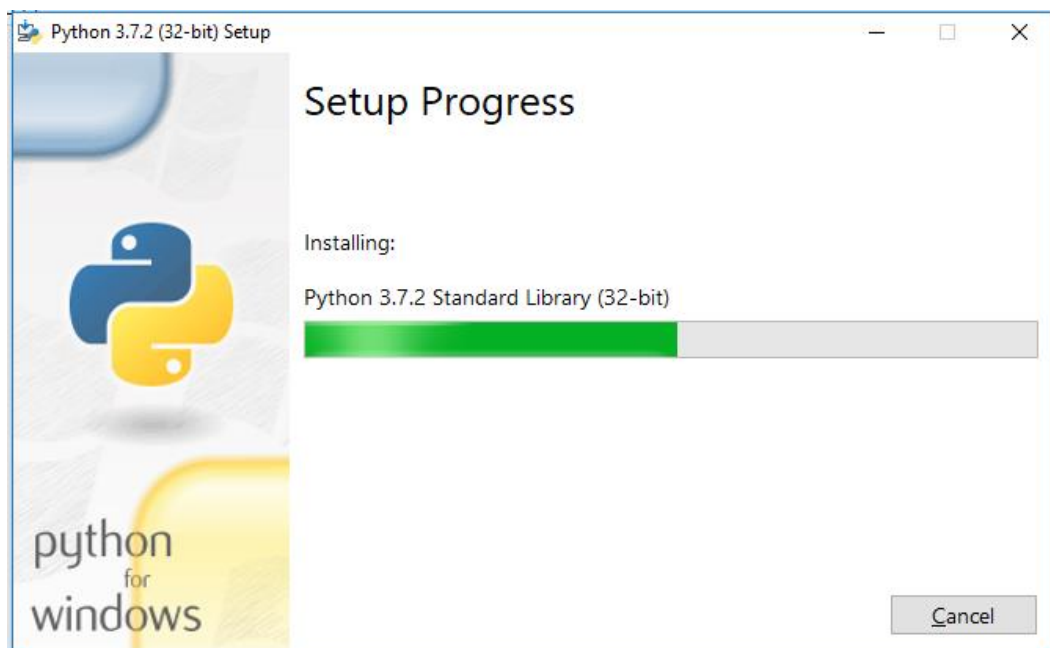
- Once we click the download button, it might ask for a location to save the file. Select an appropriate location (Here, we selected Downloads and clicked the Save button) and then proceed towards the installation.

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- Double Click the downloaded .exe file and select the Add Python 3.9 to PATH checkbox below to ensure it is automatically added to the Windows Environment variable. Else we have to do it later on manually. Once the box is checked, click on Install Now.

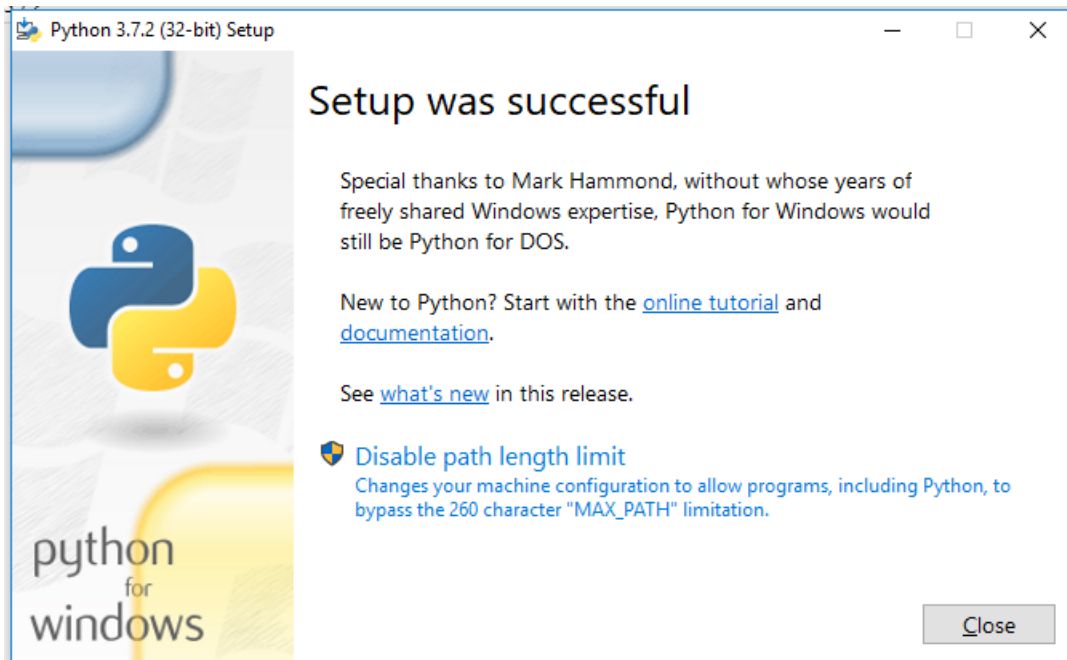


- At the time of installation of python, the pop up will show like the installation is in progress here.

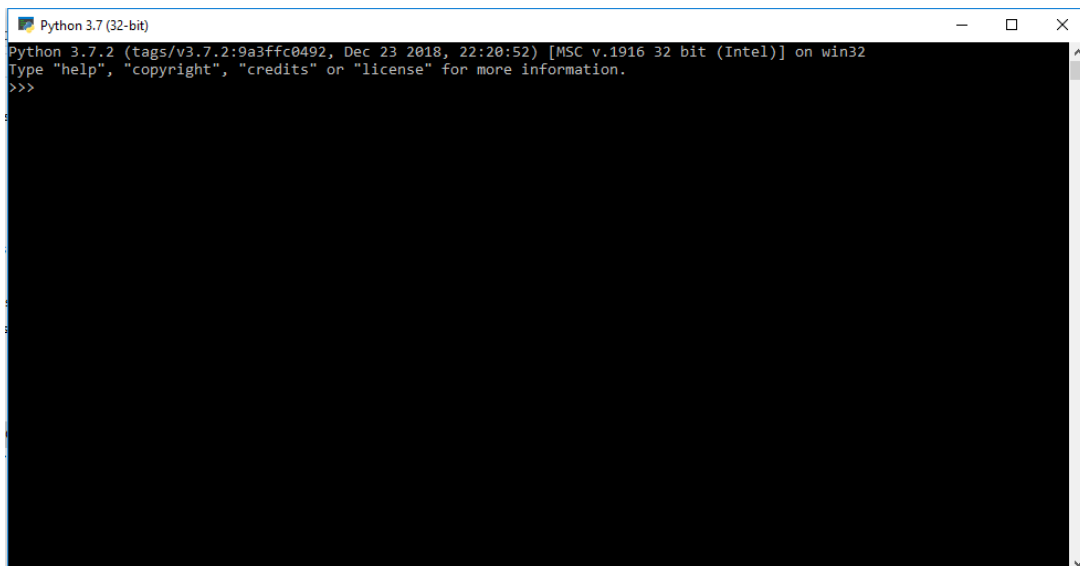


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- Once the setup is complete, click on the Close button to finish the installation of python.



- Once Python is installed, go to the Windows search bar and type Python, and we will find a desktop app called Python 3.9 (32/64-bit). Click on that and a command prompt while open as below.



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Part 2: Installing PyCharm

PyCharm is one of the sought after Integrated Development Environment(IDE) among Python programmers. It comes in two editions –

The Community Edition

This edition of python installation is free and supports only pure Python Programming but has some features like code completion, refactoring, debugging, and integration with version control systems.

The Professional Edition

This edition Of python installation is built on top of the Community Edition and includes additional support like Django, Flask, and SQLAlchemy.

Now, we will download and install the Community edition as shown below.

- Visit <https://www.jetbrains.com/pycharm/download/> and click on the Download button below the Community.

Download PyCharm

Windows macOS Linux

Professional

Full-featured IDE
for Python & Web
development

DOWNLOAD

Free trial

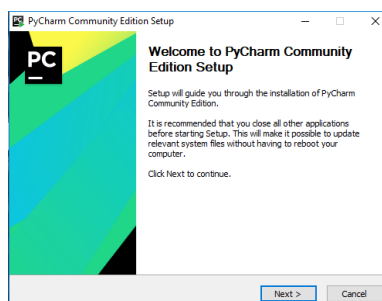
Community

Lightweight IDE
for Python & Scientific
development

DOWNLOAD

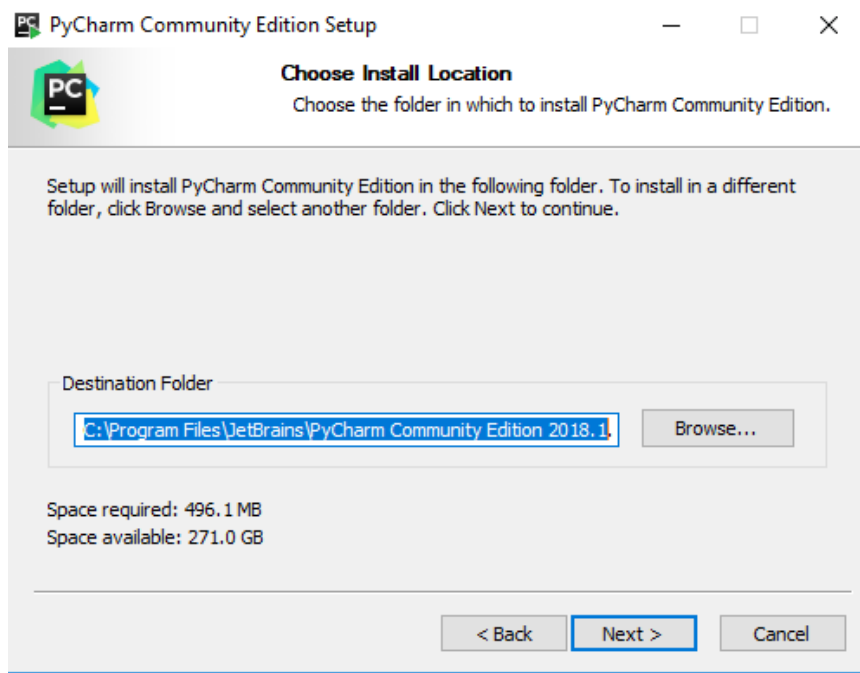
Free, open-source

- Similar to downloading Python, we can select the location to save the file and then click on the downloaded .exe file and select next.

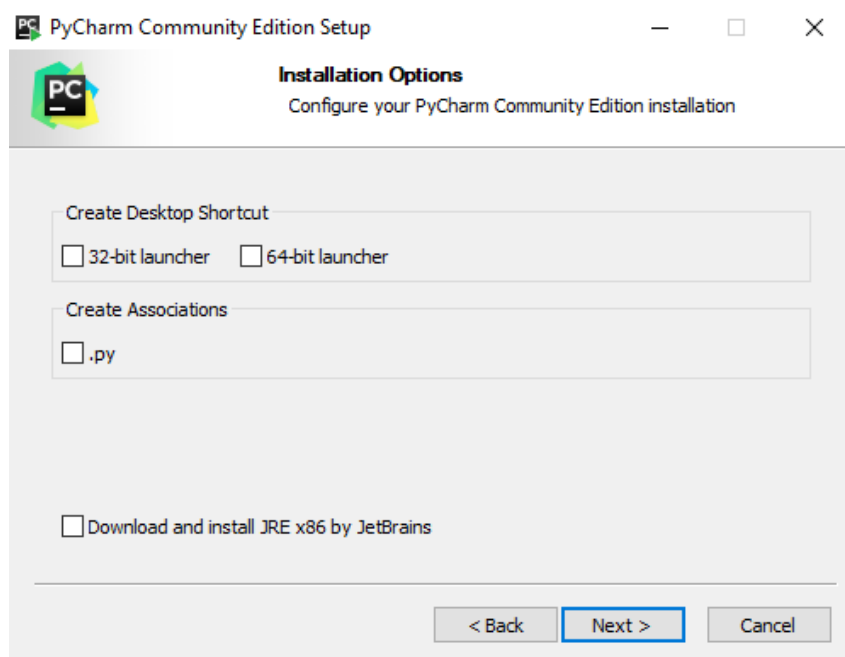


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- Browse to the location where you want to install the PyCharm IDE and select Next.

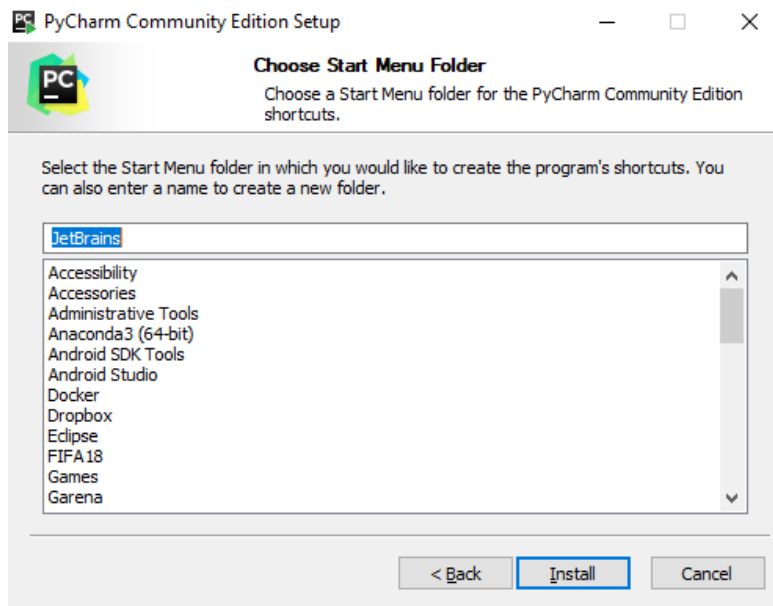


- You can create a Desktop Shortcut if you want, and select either 32-bit or 64-bit launcher based on your system's processor. If you installed a 32-bit python version select "32-bit launcher" for pycharm, if you selected 64-bit python version select "64-bit launcher"

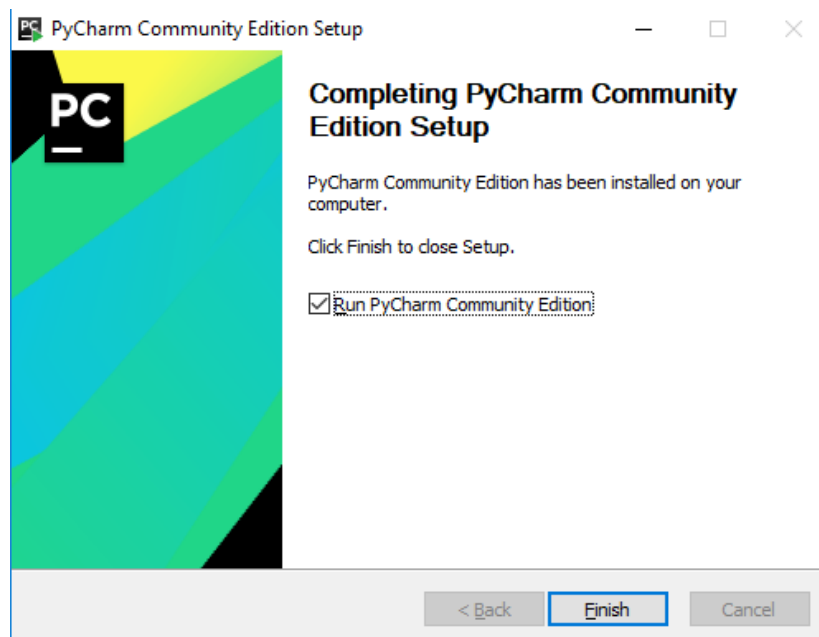


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- Keep selected JetBrains in the Start Menu Folder and click Install.

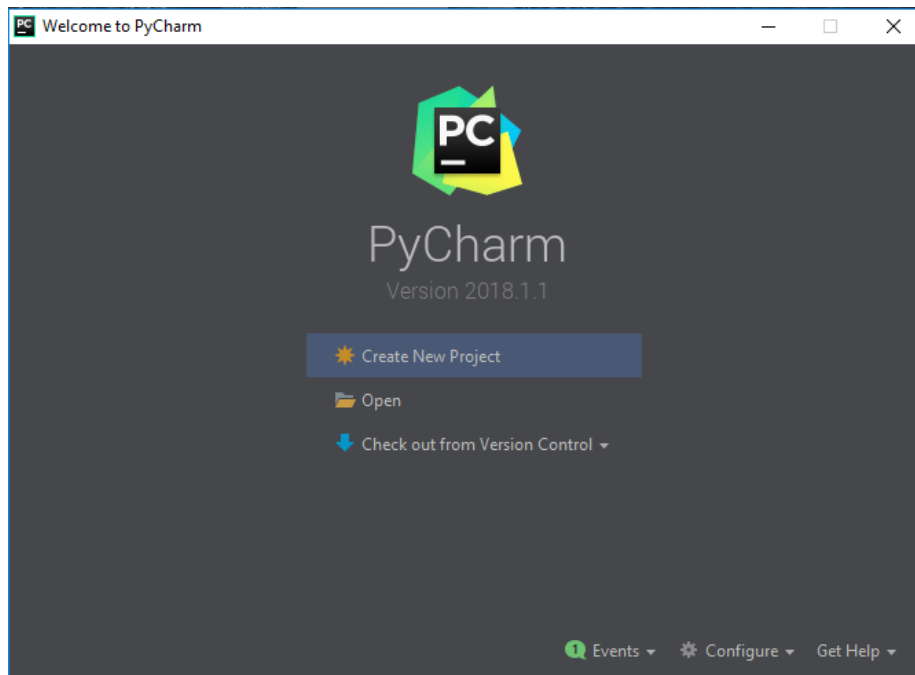


- The Installation will continue and once finished, it would prompt with the below message screen. We will check the Run PyCharm Community Edition box, and then click Finish.



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- The IDE will start, and the following screen would appear.



Thus we have successfully installed both Python and PyCharm IDE for Windows.

10 Conclusion

Technically everything that is done with Python could be done with other programming languages as well, but Python's simplicity and elegance have made it grow way more than other programming languages, and thus it has become the number one language employers are looking for. So, whether you are a programmer or an absolute beginner, learning Python would open up a plethora of job opportunities. The average Python developer earns more than 100k dollars a year. Start learning Python from today – <https://www.python.org/doc/>