

Introduction to Python Programming

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What is Python?

Python is an interpreted, object-oriented, high-level general purpose programming language

Why Python?

- Simple, easy to learn
- Free
- Many libraries support
- Versatile: Scientific programming, GUI, Database, Web, Robotics

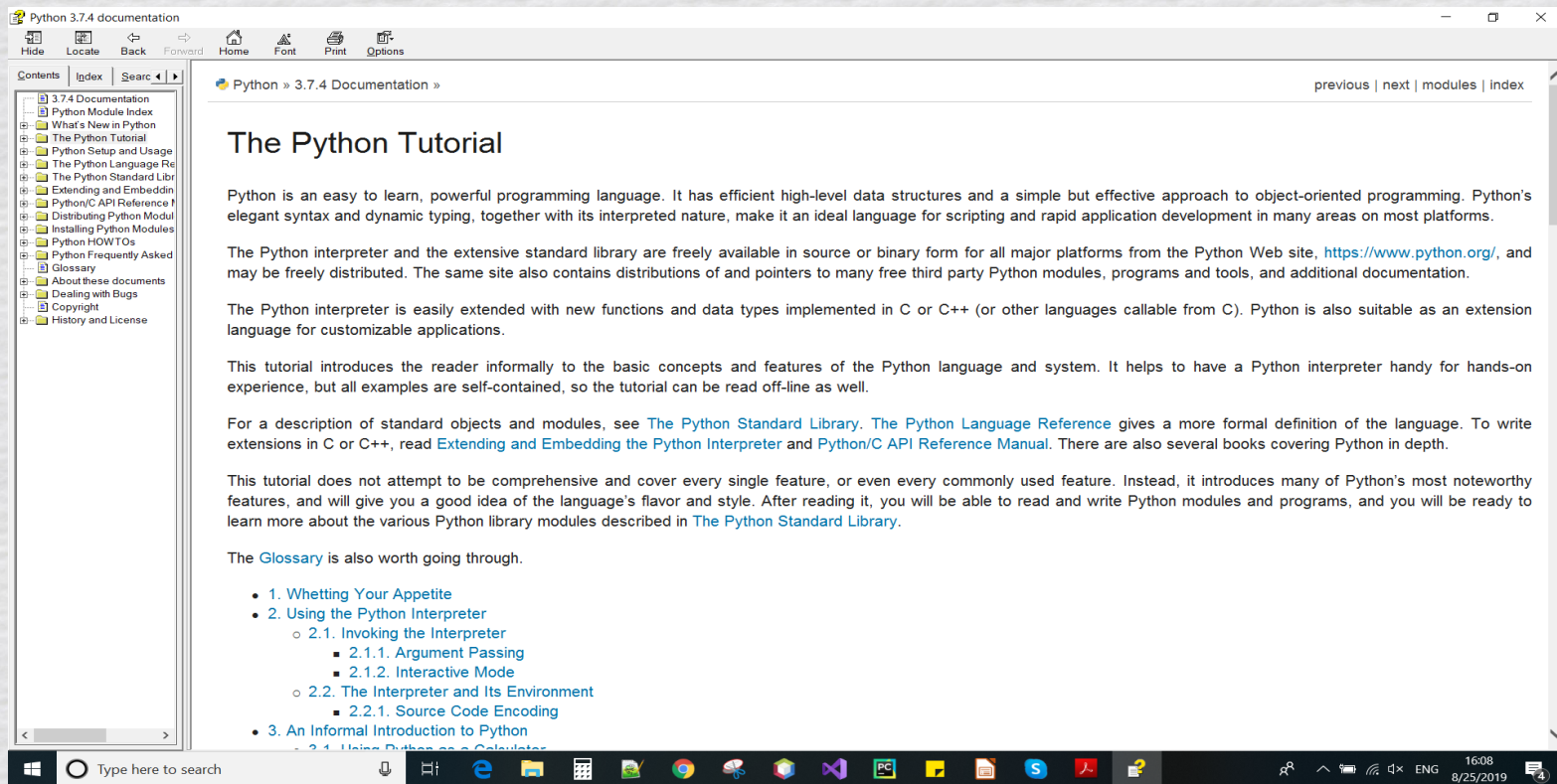
What you need

- Laptop, Windows 10
- Python 3.7 <https://www.python.org/downloads/>
- IDE (Integrated Development Environment)
<https://www.jetbrains.com/pycharm/>
- High School Mathematics
- Paper and Pencils

References

- <https://www.python.org/>
- <https://www.learnpython.org/en/Welcome>
- <https://stackoverflow.com/>
- <https://www.w3schools.com/python/default.asp>

Python 3.7 Manual



The screenshot shows a web browser window displaying the Python 3.7.4 documentation. The browser's address bar shows the URL `https://www.python.org/`. The page title is "Python 3.7.4 Documentation". The left sidebar contains a "Contents" menu with links to various sections of the documentation, including "3.7.4 Documentation", "Python Module Index", "What's New in Python", "The Python Tutorial", "Python Setup and Usage", "The Python Language Reference", "The Python Standard Library", "Extending and Embedding", "Python/C API Reference Manual", "Distributing Python Modules", "Installing Python Modules", "Python HOWTOs", "Python Frequently Asked Questions", "Glossary", "About these documents", "Dealing with Bugs", "Copyright", and "History and License". The main content area is titled "The Python Tutorial" and contains the following text:

Python is an easy to learn, powerful programming language. It has efficient high-level data structures and a simple but effective approach to object-oriented programming. Python's elegant syntax and dynamic typing, together with its interpreted nature, make it an ideal language for scripting and rapid application development in many areas on most platforms.

The Python interpreter and the extensive standard library are freely available in source or binary form for all major platforms from the Python Web site, <https://www.python.org/>, and may be freely distributed. The same site also contains distributions of and pointers to many free third party Python modules, programs and tools, and additional documentation.

The Python interpreter is easily extended with new functions and data types implemented in C or C++ (or other languages callable from C). Python is also suitable as an extension language for customizable applications.

This tutorial introduces the reader informally to the basic concepts and features of the Python language and system. It helps to have a Python interpreter handy for hands-on experience, but all examples are self-contained, so the tutorial can be read off-line as well.

For a description of standard objects and modules, see [The Python Standard Library](#). [The Python Language Reference](#) gives a more formal definition of the language. To write extensions in C or C++, read [Extending and Embedding the Python Interpreter](#) and [Python/C API Reference Manual](#). There are also several books covering Python in depth.

This tutorial does not attempt to be comprehensive and cover every single feature, or even every commonly used feature. Instead, it introduces many of Python's most noteworthy features, and will give you a good idea of the language's flavor and style. After reading it, you will be able to read and write Python modules and programs, and you will be ready to learn more about the various Python library modules described in [The Python Standard Library](#).

The [Glossary](#) is also worth going through.

- 1. [Whetting Your Appetite](#)
- 2. [Using the Python Interpreter](#)
 - 2.1. [Invoking the Interpreter](#)
 - 2.1.1. [Argument Passing](#)
 - 2.1.2. [Interactive Mode](#)
 - 2.2. [The Interpreter and Its Environment](#)
 - 2.2.1. [Source Code Encoding](#)
- 3. [An Informal Introduction to Python](#)

The bottom of the screenshot shows the Windows taskbar with various application icons and the system clock displaying 16:08 on 8/25/2019.

Course Outline

Fundamentals:

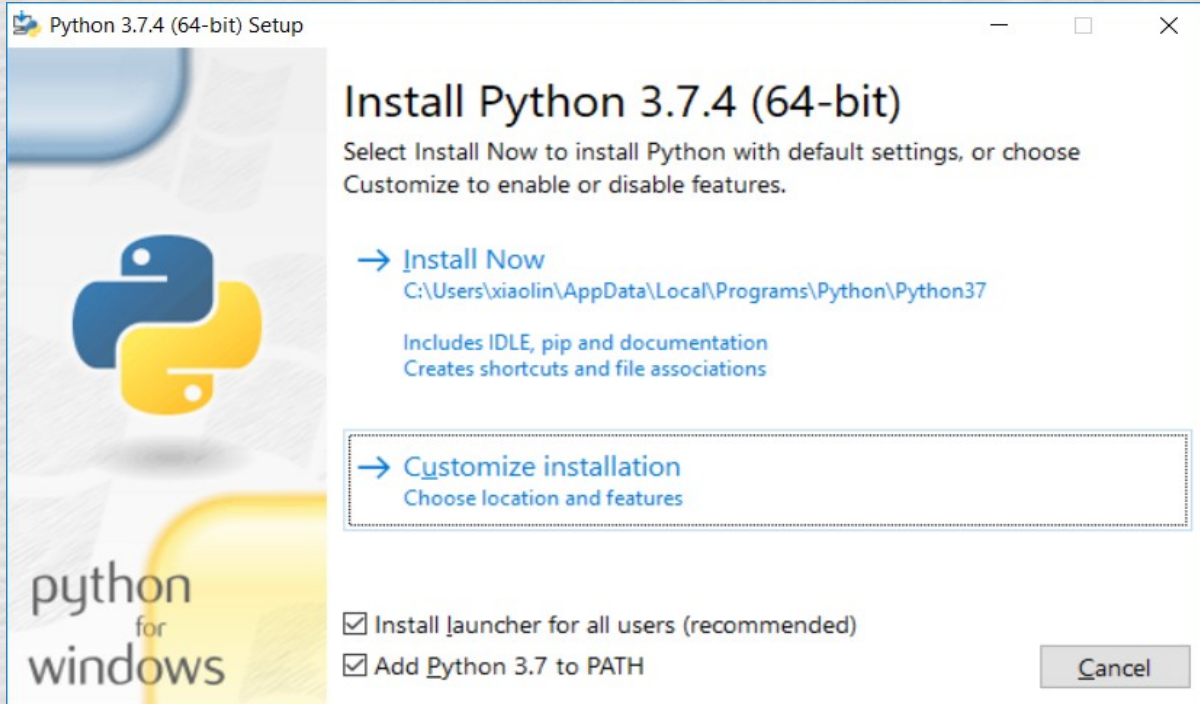
- Use pycharm IDE
- Python interactive environment, use it for arithmetic
- Types, variables, strings
- Functions
- Expressions
- Decision branching
- Loops
- More functions,
- Arrays (List)
- Algorithms
- Classes

Projects:

- Graphics – plotting curves
- Encryption/Decryption
- Puzzles
- Simulations

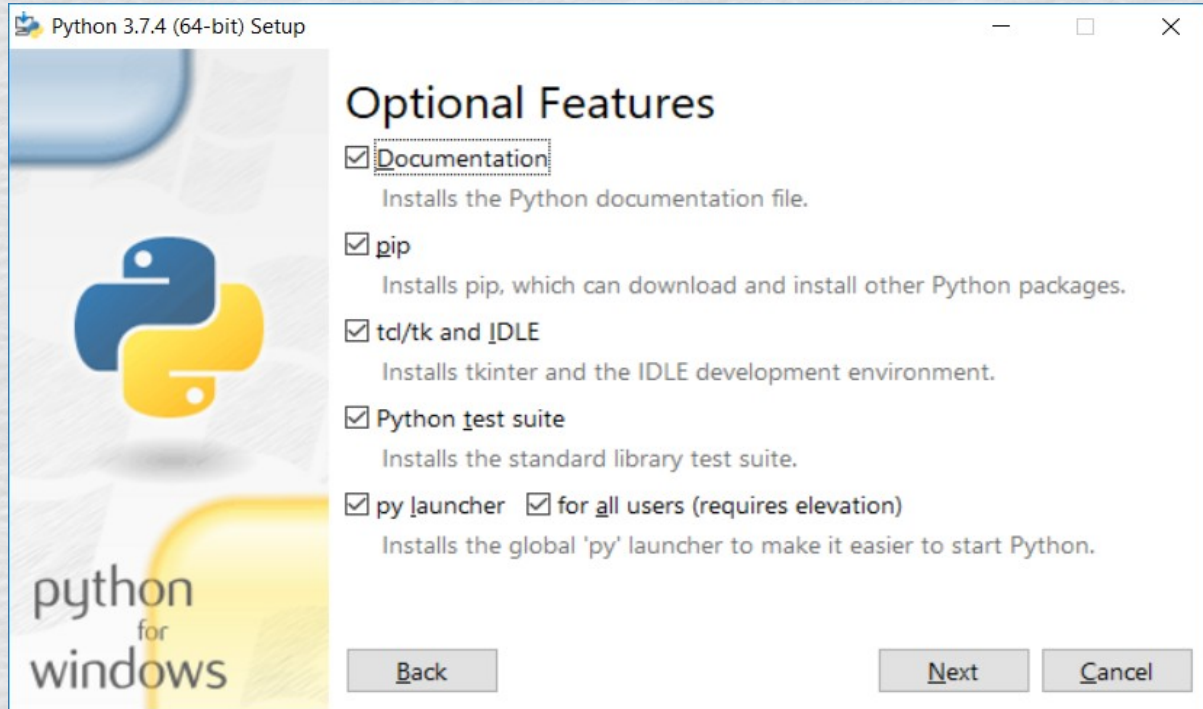
Install Python

<https://www.python.org/downloads/>



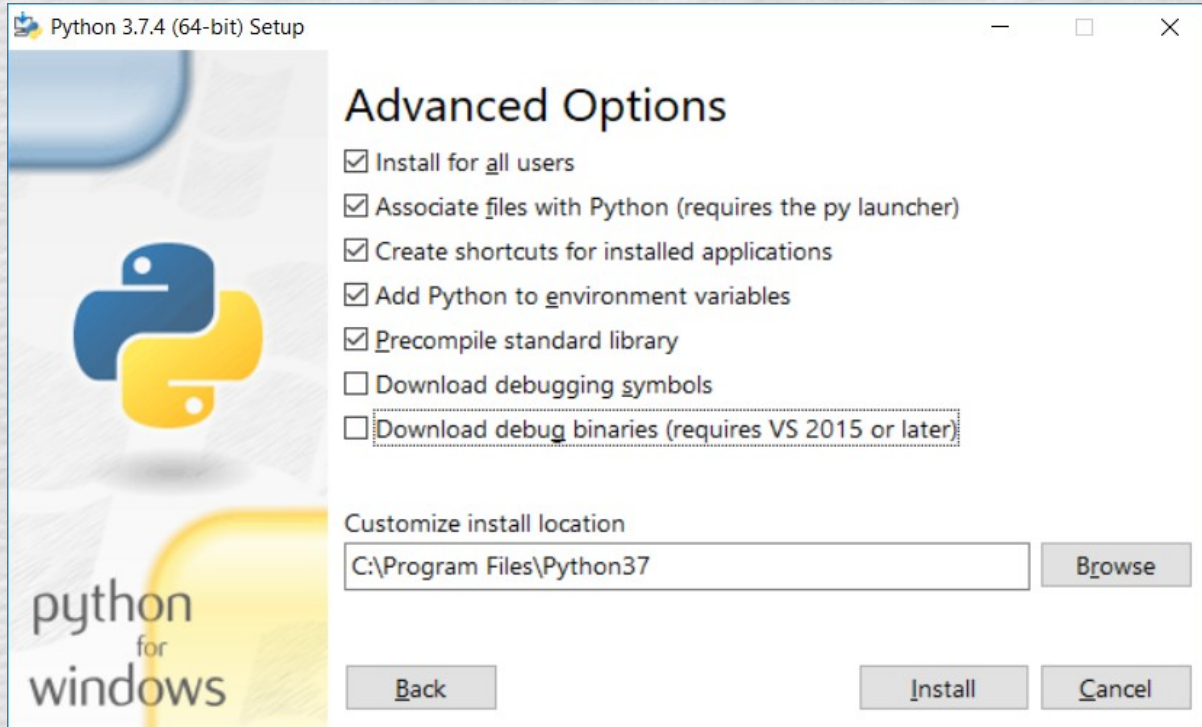
- Setup file: **python-3.7.4-amd64.exe**
- Check Python 3.7 to PATH
- Select Customize installation

Install Python



Select all optional features on this screen

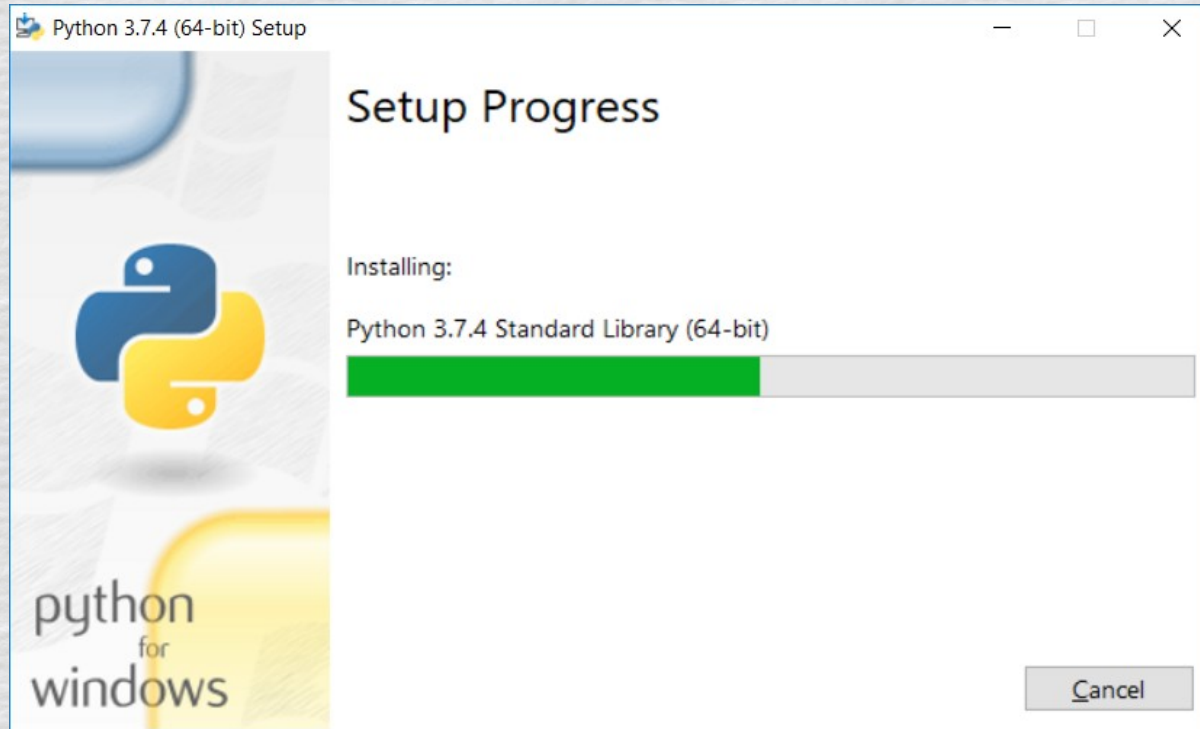
Install Python



Check the options as indicated.

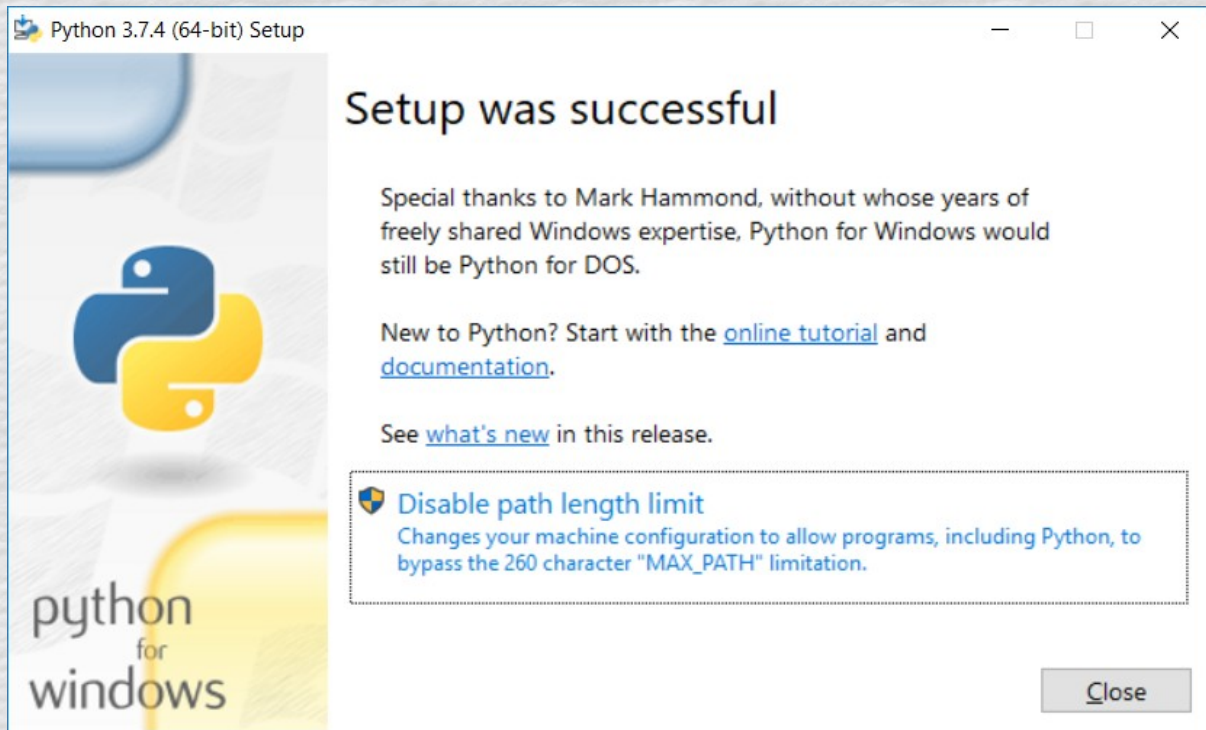
Make sure the install location is `c:\Program Files\PYthon37`

Install Python



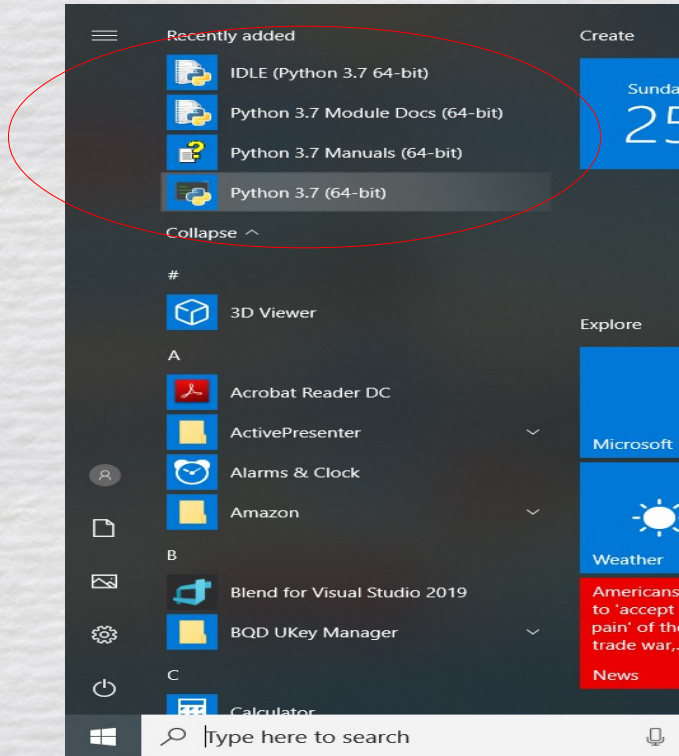
Wait for installation to complete

Install Python



Disable path length limit

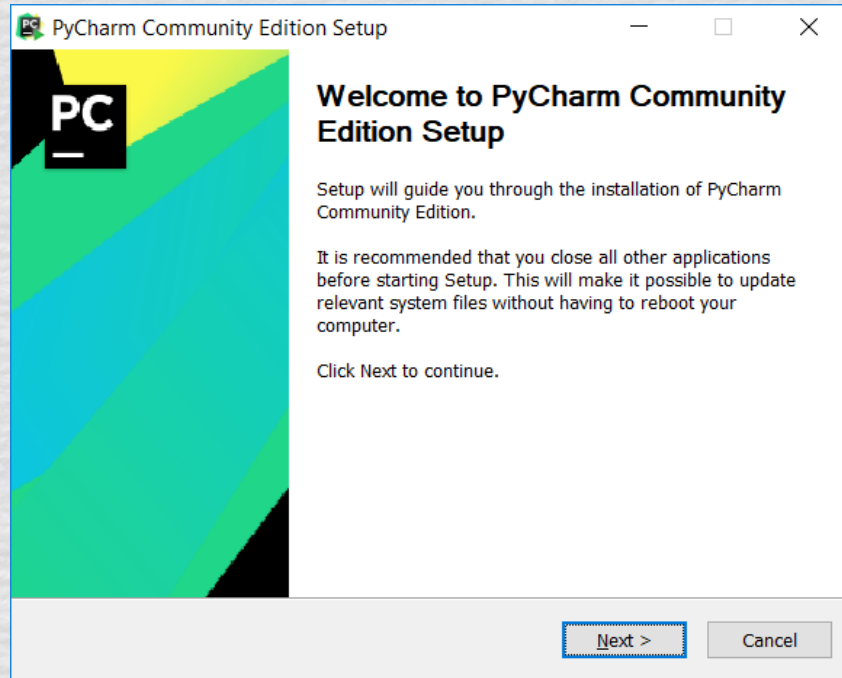
Install Python



Check start up menu after
install is done

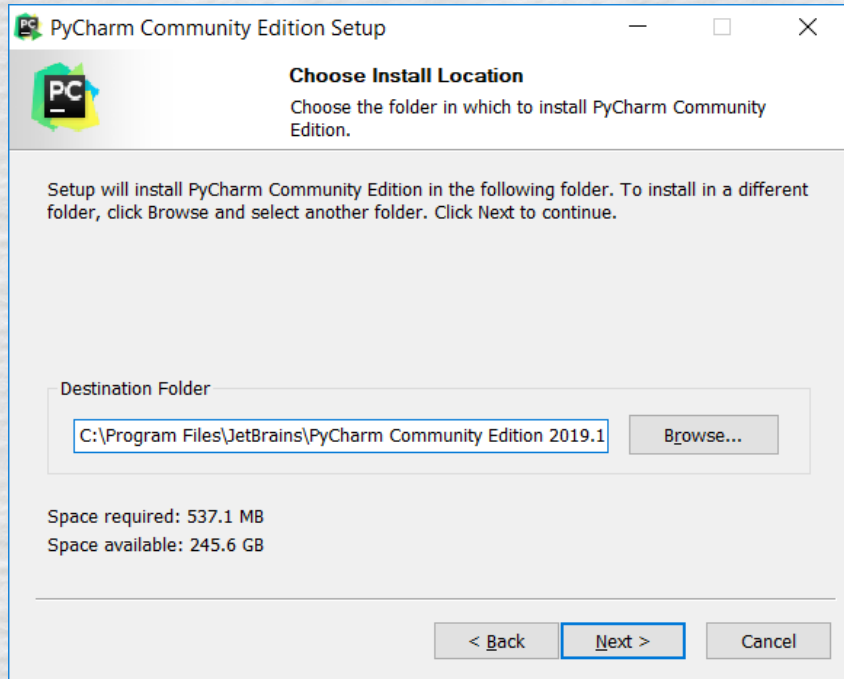
Install Pycharm Community Edition

<https://www.jetbrains.com/pycharm/download/#section=windows>

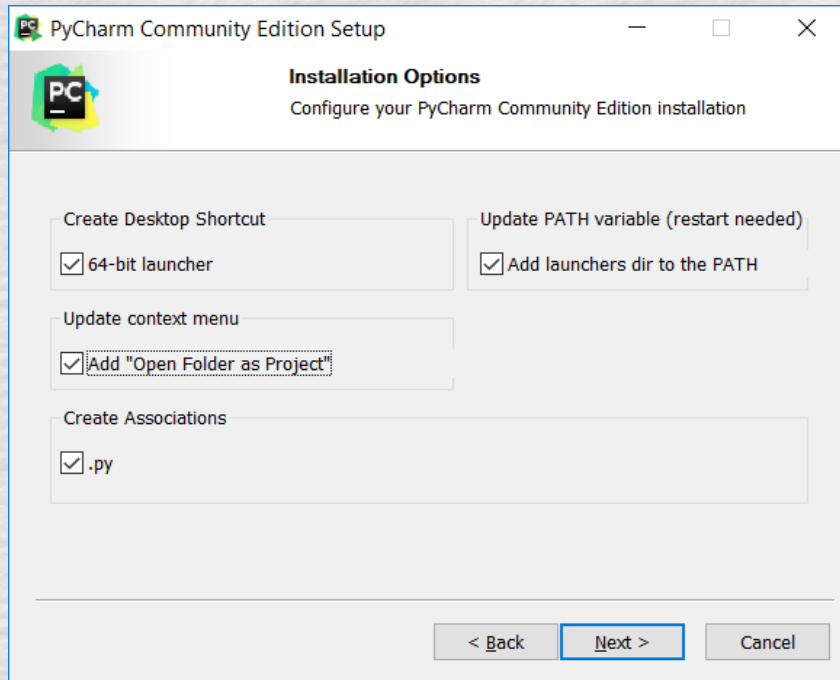


Setup file: **pycharm-community-2019.1.3.exe**

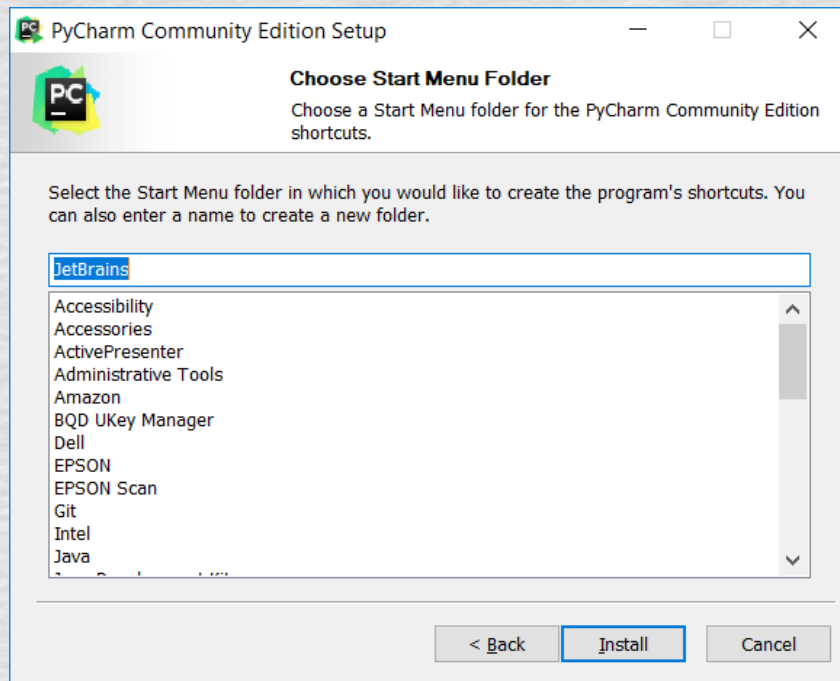
Install Pycharm Community Edition



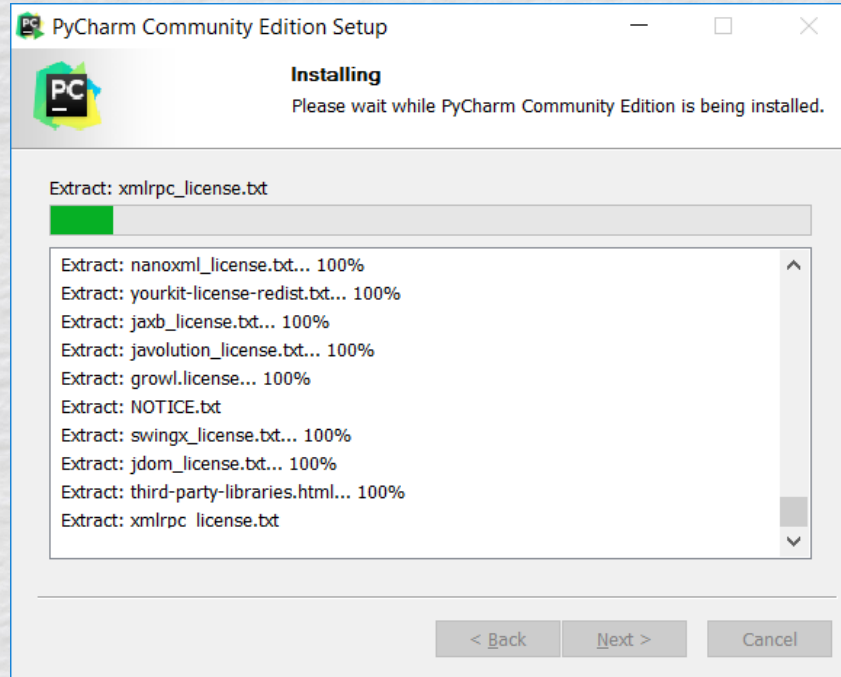
Install Pycharm Community Edition



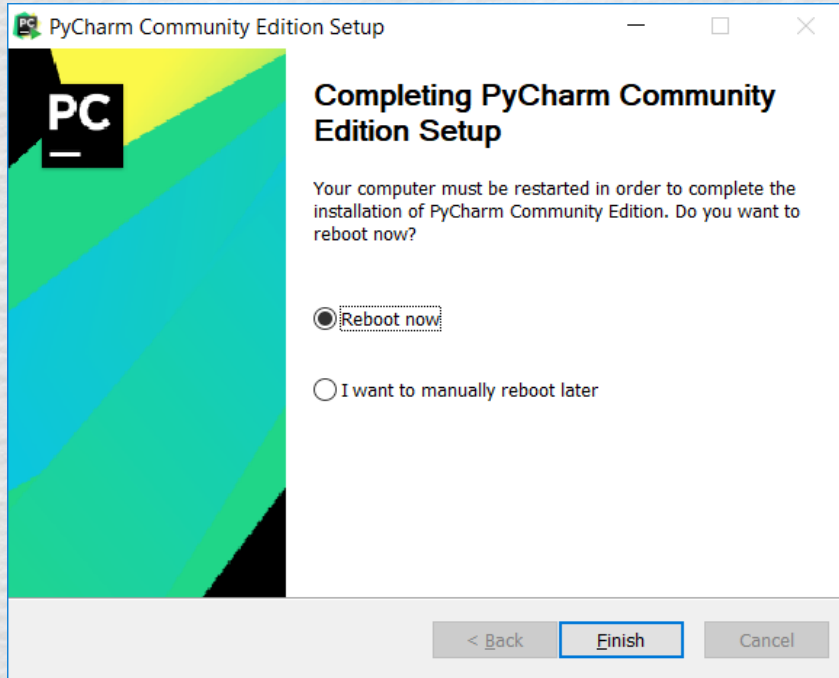
Install Pycharm Community Edition



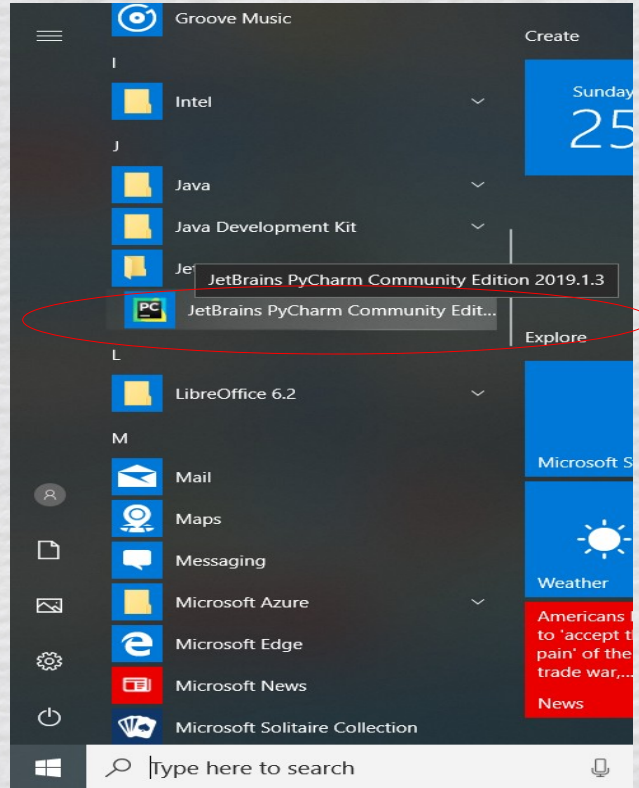
Install Pycharm Community Edition



Install Pycharm Community Edition



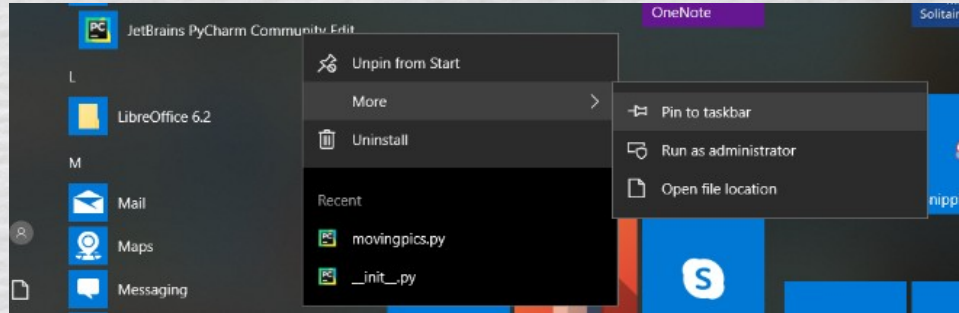
Install Pycharm Community Edition



Check pycharm in start menu after install is done

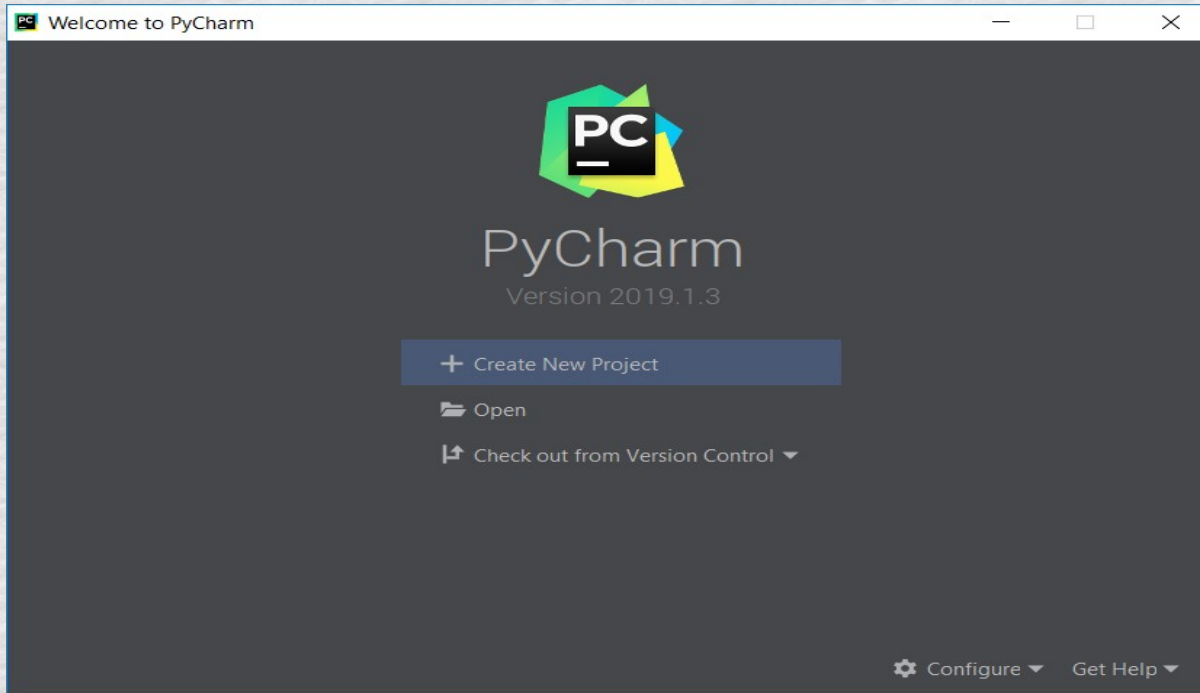
Install Pycharm Community Edition

Pin the application to taskbar



Install Pycharm Community Edition

Launch PyCharm



Install Pycharm Community Edition

Congrats! You can continue to lesson 2.