

Python Introduction

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Outline

- The Python Programming Language
- Python in Visual Studio
- Installing from python.org
- Google Colab
- PyCharm IDE

Introduction

- Python is an interpreted, high-level, general-purpose programming language.
- Created by Guido van Rossum and first released in 1991.
- Python's design philosophy emphasizes code readability.
- Its language constructs and object-oriented approach aim to help programmers write clear, logical code for small and large-scale projects.

Features and Philosophy

- Features
 - Batteries Included
 - Everything is an Object
 - Interactive Shell
 - Cross Platform
- Philosophy
 - Beautiful is better than ugly
 - Explicit is better than implicit
 - Simple is better than complex
 - Complex is better than complicated
 - Readability counts

Python Resources

- Official documentation: <https://docs.python.org>
- Tutorials: <https://www.learnpython.org/>
- Python Books
 1. **A Whirlwind Tour of Python**, by Jake VanderPlas, <https://www.oreilly.com/programming/free/files/a-whirlwind-tour-of-python.pdf> (**short**)
 2. **Python for Everybody**, by Charles R. Severance, <https://py4e.com/book.php> (**medium**)
 3. **Fundamentals of Python Programming**, by Richard L. Halterman, <http://python.cs.southern.edu/pythonbook/pythonbook.pdf> (**long**)

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1. Start Visual Studio and select **Create a new project**


Visual Studio 2019

Open recent

Today

 PythonApplication2.sln 2/6/2020 1:30 PM
C:\Users\abandah\source\repos\PythonApplication2

This month

 TestingForComputerSkills.sln 1/24/2020 7:16 PM
C:\Users\abandah\source\repos\TestingForComputerSkills

This month

 PythonApplication1.sln 1/16/2020 8:33 PM
C:\Users\abandah\source\repos\PythonApplication1

Get started



Clone or check out code

Get code from an online repository like GitHub or Azure DevOps



Open a project or solution

Open a local Visual Studio project or .sln file



Open a local folder

Navigate and edit code within any folder



Create a new project


Choose a project template with code scaffolding to get started

[Continue without code →](#)

2. Select the language **Python** and **Python Application**, then click **Next**.

Create a new project

Recent project templates

 Python Application Python

 Console App C++

Search for templates (Alt+S)



Clear all

Python

All platforms

All project types



Python Application

A project for creating a command-line application

Python

Windows

Linux

macOS

Console



Web Project

A project for creating a generic Python web project

Python

Windows

Linux

macOS

Web



Django Web Project

A project for creating an application using the Django web framework. It features sample pages that use the Twitter Bootstrap framework for responsive web design.

Python

Windows

Linux

macOS

Web



Flask Web Project

A project for creating an application using the Flask web framework with the Jinja template engine. It features sample pages that use the Twitter Bootstrap framework for responsive web design.

Python

Windows

Linux

macOS

Web

Back

Next

3. Enter a name for your project then press **Create**.

Configure your new project

Python Application Python Windows Linux macOS Console

Project name

PythonApplication3

Location

C:\Users\abandah\source\repos

Solution name i

PythonApplication3

Place solution and project in the same directory

Back

Create

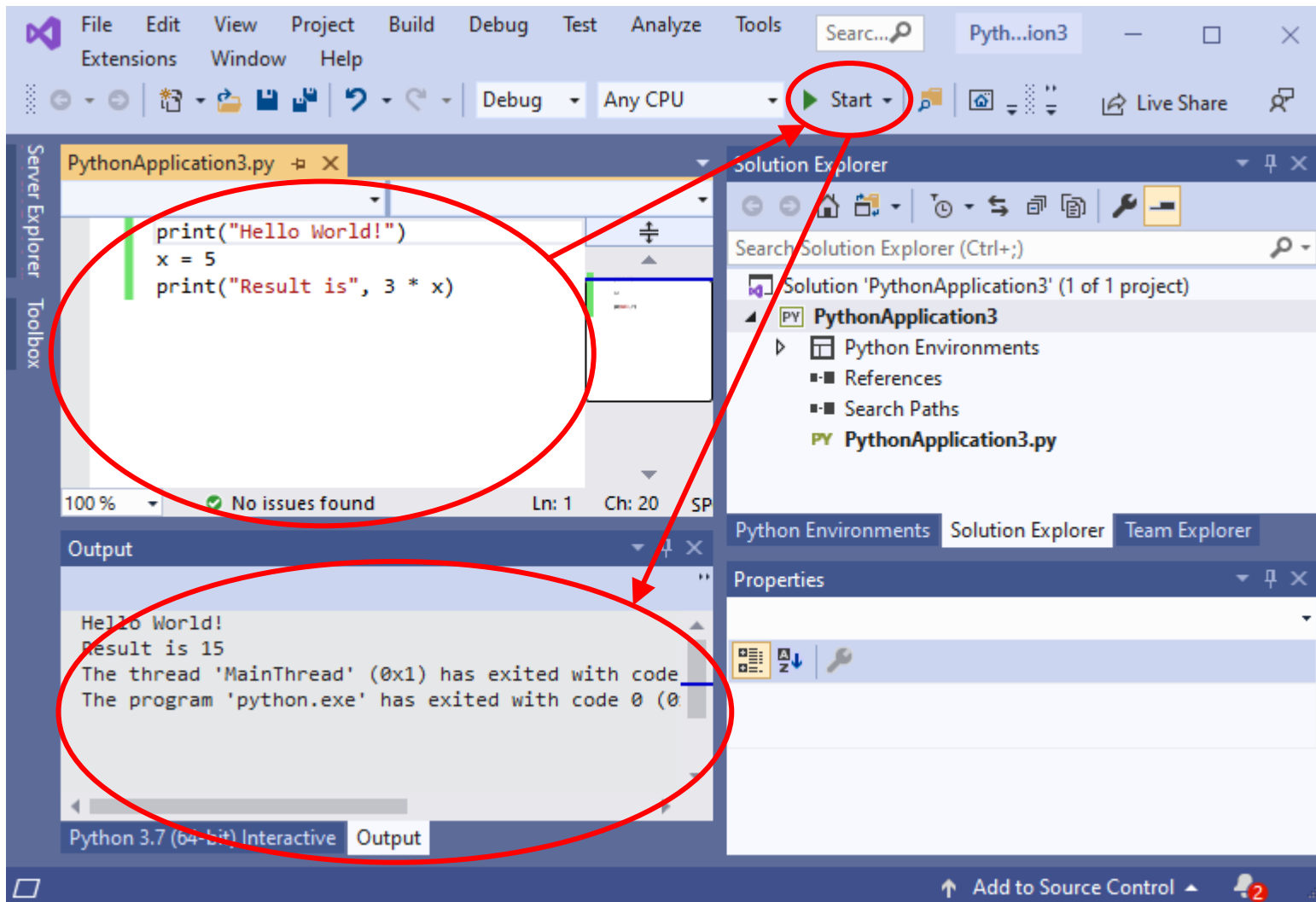
4. You can directly enter and run Python code in the **Python Interactive** window.

The screenshot displays the Visual Studio Code interface with a Python project named 'PythonApplication3'. The main editor shows 'PythonApplication3.py'. The Solution Explorer on the right shows the project structure, including 'PythonApplication3.py'. The Python Interactive window at the bottom is highlighted with a red circle and shows the following content:

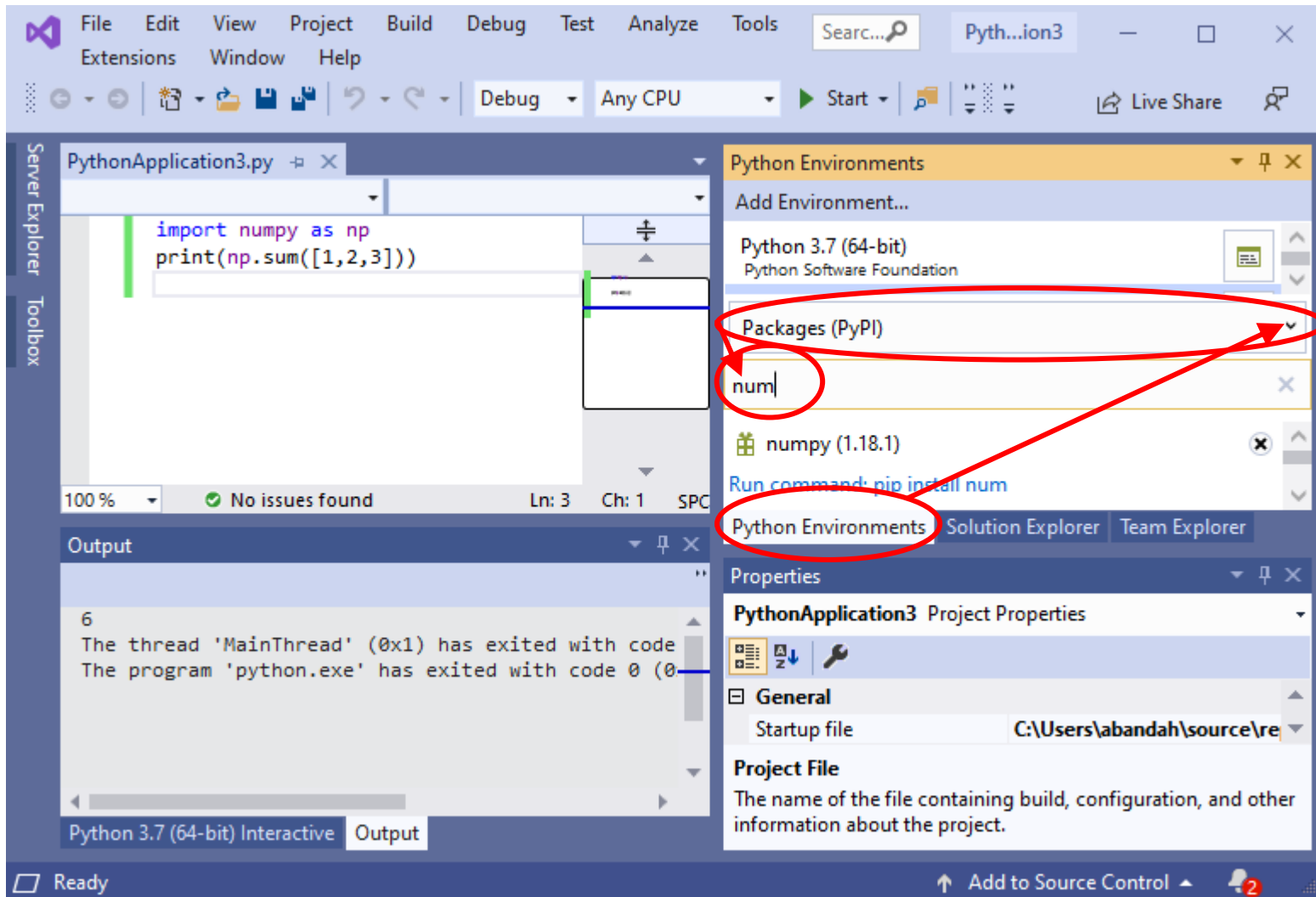
```
Python 3.7 (64-bit) Interactive
Environment: Python 3.7 (64-bit)
Python 3.7 (64-bit) interactive window [PTVS 16.4.
Type $help for a list of commands.
>>> 1 + 1
2
>>> |
```

The Python Interactive window also shows 'Python 3.7 (64-bit) Interactive' and 'Output' tabs at the bottom.

5. You can enter your Python program in the **Editor** window and execute it by clicking **Start**. The output appears in the **Output** window.



6. To install or list packages, select the **Python Environments** and **Packages (PyPI)**, then enter the name of the package in the **search box**.



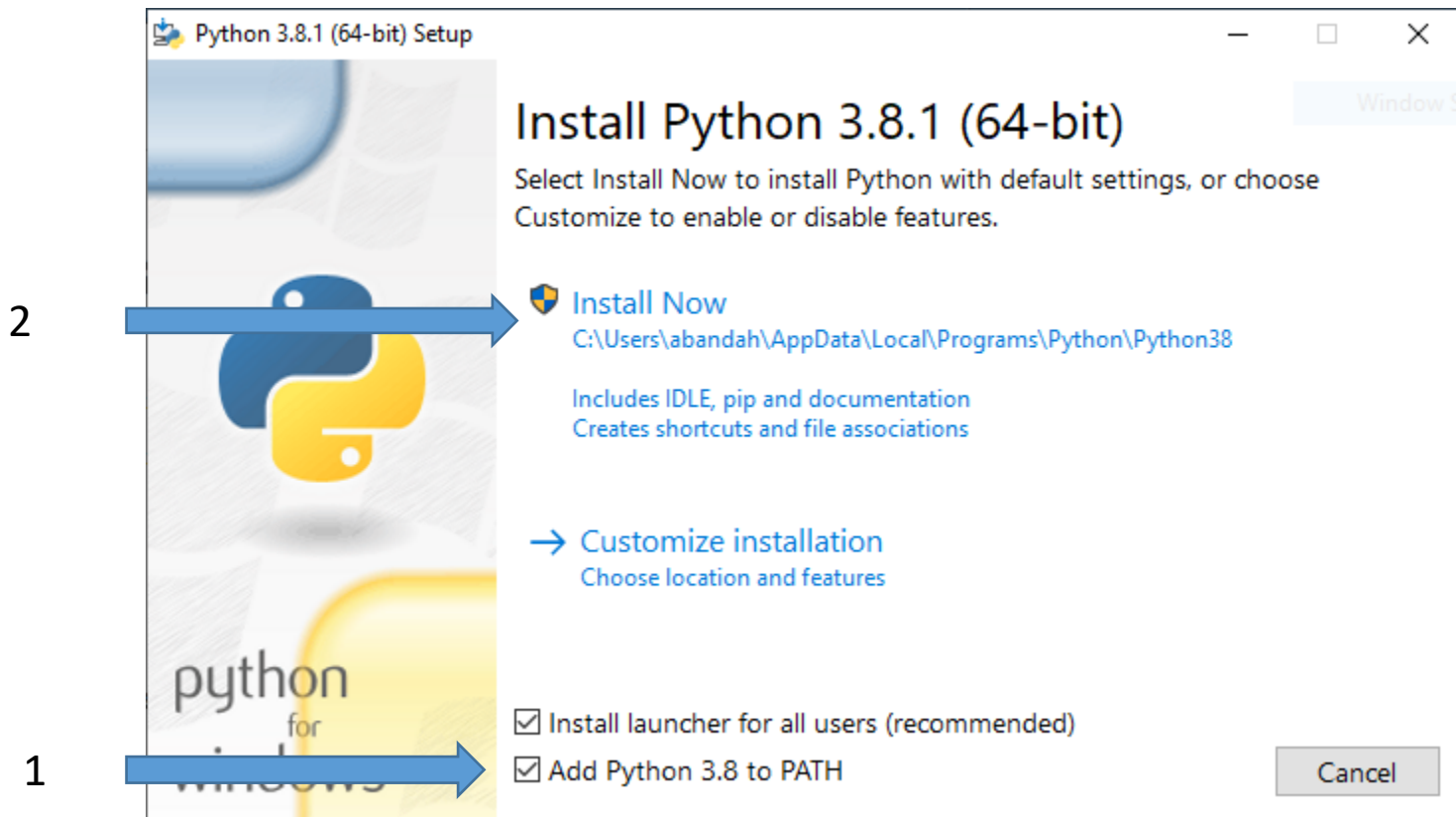
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Installation from python.org

- Install Python 3 from <https://www.python.org/downloads/>
- The latest version in January 2020 is 3.8.1
- For using TensorFlow, you need a 64-bit Python version, e.g.,
<https://www.python.org/ftp/python/3.8.1/python-3.8.1-amd64.exe>
- For TensorFlow 1.6 and newer, your processor must support AVX (i3, i5, ...). Otherwise use TensorFlow 1.5.

When installing Python, check the “Add to PATH” option



Installing Python Packages

- From your OS command prompt, check the options of the package installing system by:

```
C:\>pip help
```

- Check the installed packages using:

```
C:\>pip list
```

- Install needed packages through:

```
C:\>pip install --upgrade jupyter matplotlib  
numpy pandas scipy scikit-learn
```


Executing Python Code

- Starting and using Python Interpreter

```
PS C:\Users\abandah> python
Python 3.8.1 (tags/v3.8.1:1b293b6, Dec 18 2019, 2
3:11:46) [MSC v.1916 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license"
for more information.
>>> x = 5
>>> print(3 * x)
15
>>> exit()
PS C:\Users\abandah>
```

- Creating a Python script file

```
# file: test.py
print("Running test.py")
x = 5
print("Result is", 3 * x)
```

- Running the script file

```
PS C:\Users\abandah> python test.py
Running test.py
Result is 15
PS C:\Users\abandah>
```

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Google Colab

- **Colaboratory** is a free Jupyter notebook environment that requires no setup and runs entirely in the cloud. With **Colaboratory** you can write and execute code, save and share your analyses, and access powerful computing resources, all for free from your browser.

<https://colab.research.google.com/>

- Check the introduction in <https://colab.research.google.com/notebooks/intro.ipynb#>

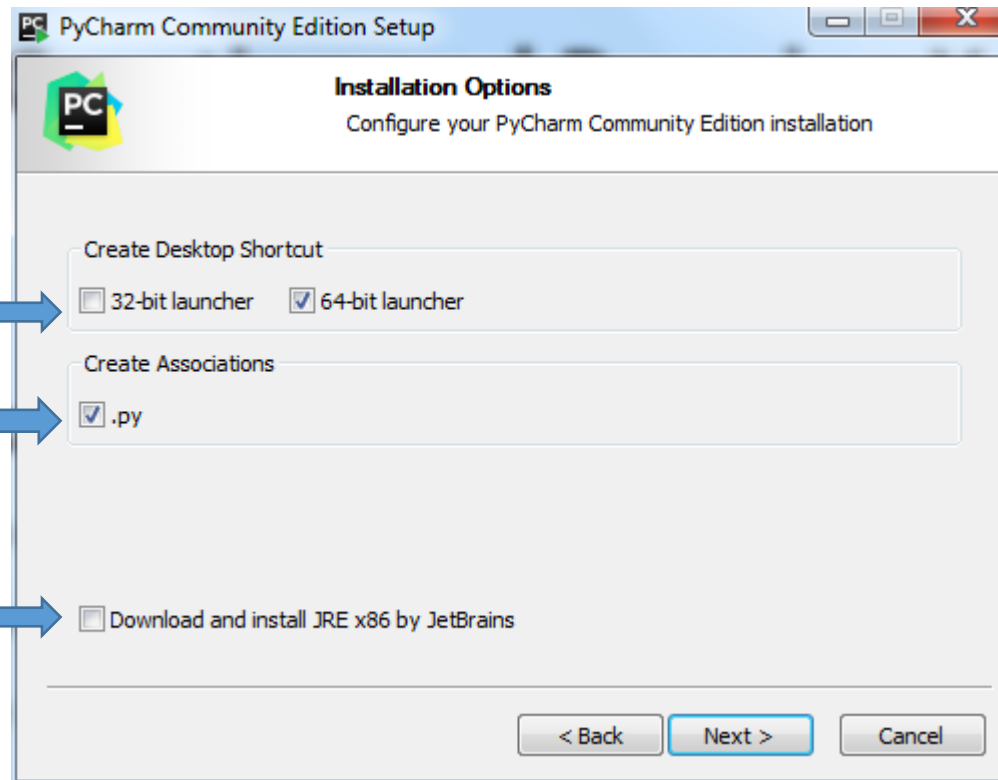
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PyCharm IDE

- Python comes with IDLE. This is a primitive IDE.
- **PyCharm** is a powerful Python IDE. Install it from <https://www.jetbrains.com/pycharm/>
- Install the free **Community** version.
- Students can also install the **Professional** version for free. You need university email address.
- Read the first two steps of “First Steps” at <https://www.jetbrains.com/help/pycharm/first-steps.html>

PyCharm Installation



Select the relevant ones

Select this

No need to select

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