

# PYTHON PROGRAMMING

AN INTRODUCTION



# SESSION OUTLINE

- Why Python?
- Python 2 vs. Python 3
- Python Installation
- Jupyter Notebooks
- Git and GitHub

# WHY PYTHON?

- 1990 by Guido van Rossum
- Python 3 released on 2008
- Goal: Easy to use
- Goal: Easy to read
- More on Why
  - Easy to learn
  - Extensive libraries and tools!
  - Many applications
  - Focused on the developer

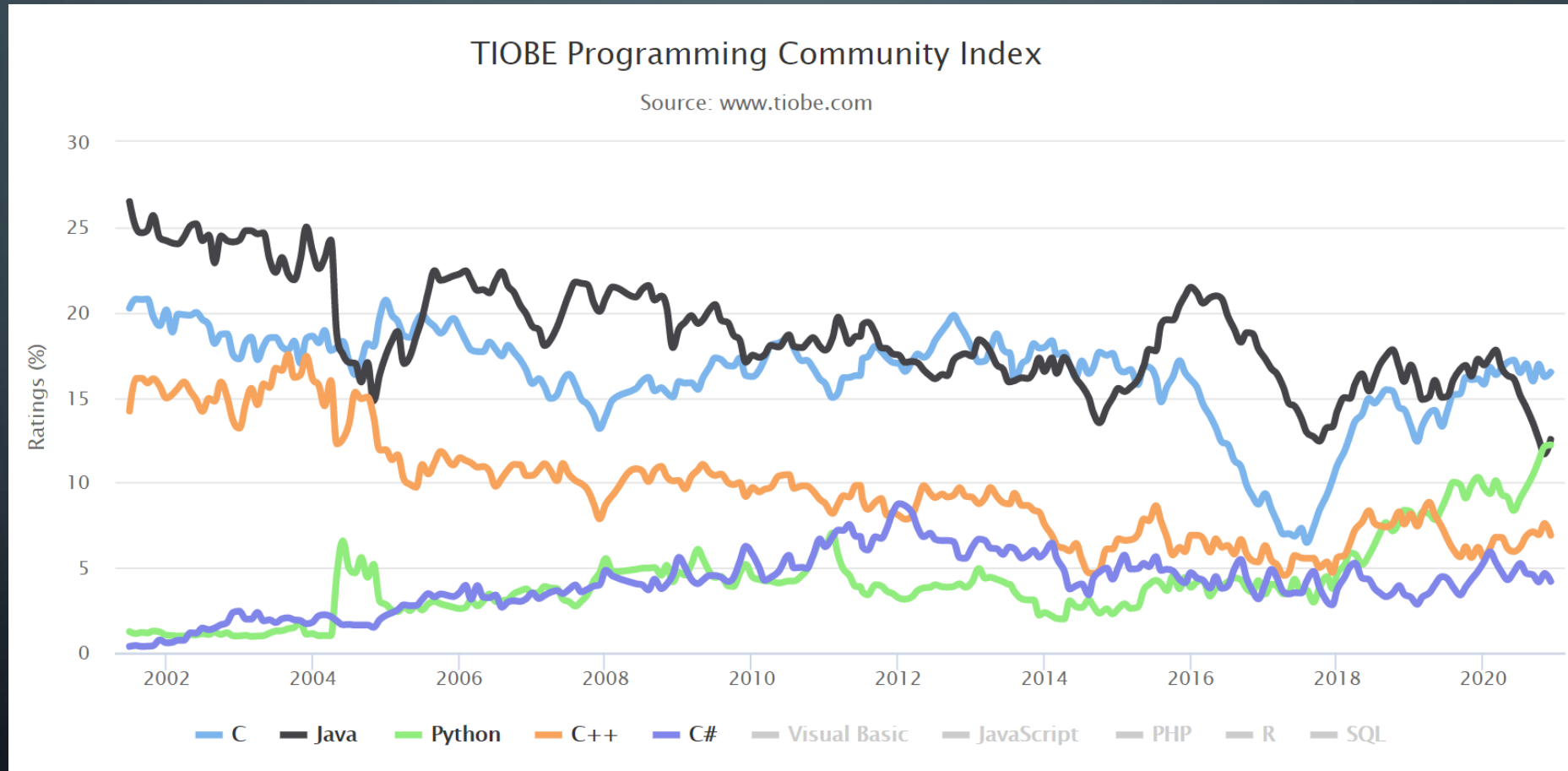
# TIOBE INDEX

The TIOBE Programming Community index is an indicator of the popularity of programming languages. The index is updated once a month. The ratings are based on the number of skilled engineers world-wide, courses and third party vendors. Popular search engines such as Google, Bing, Yahoo!, Wikipedia, Amazon, YouTube and Baidu are used to calculate the ratings. It is important to note that the TIOBE index is not about the *best* programming language or the language in which *most lines of code* have been written.

The index can be used to check whether your programming skills are still up to date or to make a strategic decision about what programming language should be adopted when starting to build a new software system. The definition of the TIOBE index can be found [here](#).

Dec 2020	Dec 2019	Change	Programming Language	Ratings	Change
1	2	▲	C	16.48%	+0.40%
2	1	▼	Java	12.53%	-4.72%
3	3		Python	12.21%	+1.90%
4	4		C++	6.91%	+0.71%
5	5		C#	4.20%	-0.60%

# TIOBE INDEX



# DATA ANALYTICS, WEB, AND CYBERSECURITY

- Libraries! ([most popular](#))
- NumPy and Pandas - Data Analysis with Python
- Large data sets, Visualizations
- Machine Learning
- Web – Django and Flask ([full stack course by Jose Portilla](#))
- Open Source CV ([OpenCV tutorials](#))
- Cybersecurity ([Python for Cybersecurity](#))

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# INSTALLING PYTHON

**Download the latest version for Windows**

Download Python 3.9.1

Looking for Python with a different OS? Python for [Windows](#),  
[Linux/UNIX](#), [Mac OS X](#), [Other](#)

Want to help test development versions of Python? [Prereleases](#), [Docker images](#)

Looking for Python 2.7? See below for specific releases



### Install Now

C:\Users\20FPython\AppData\Local\Programs\Python\Python39

Includes IDLE, pip and documentation  
Creates shortcuts and file associations

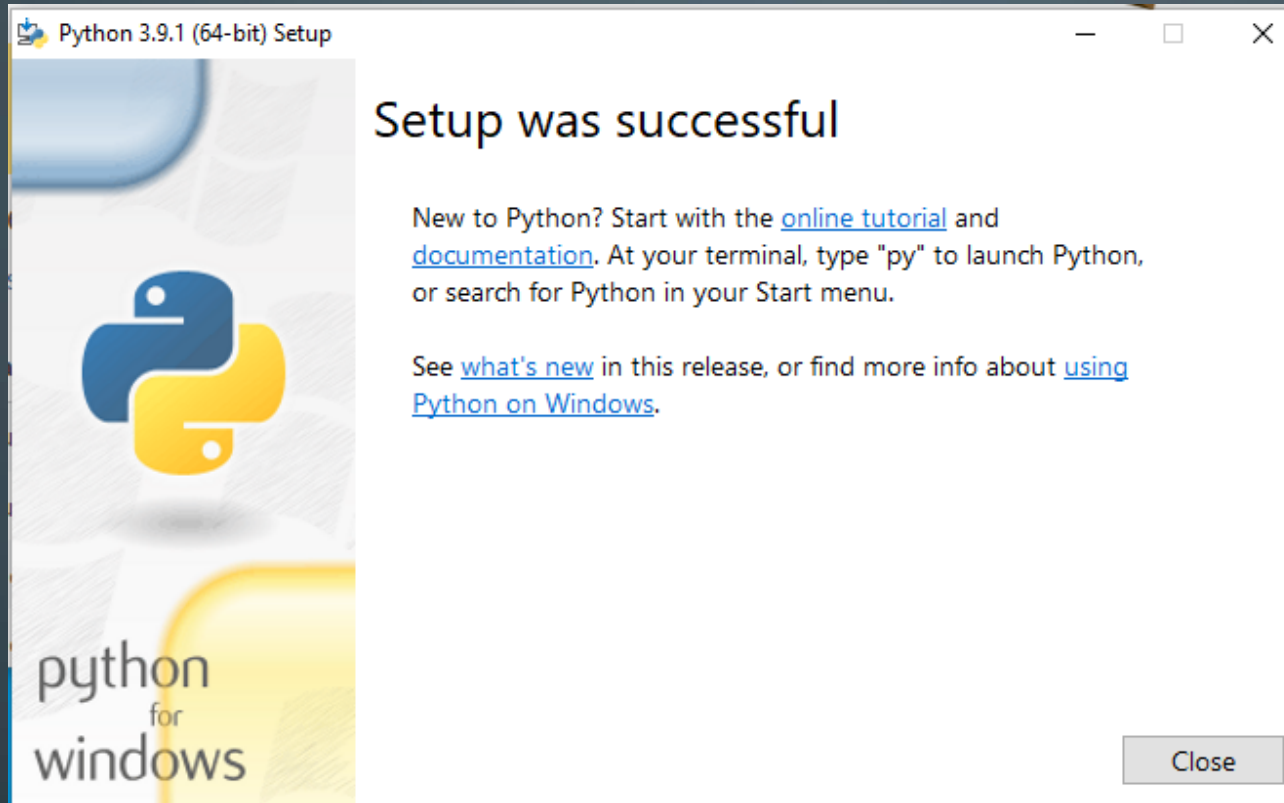


### Customize installation

Choose location and features

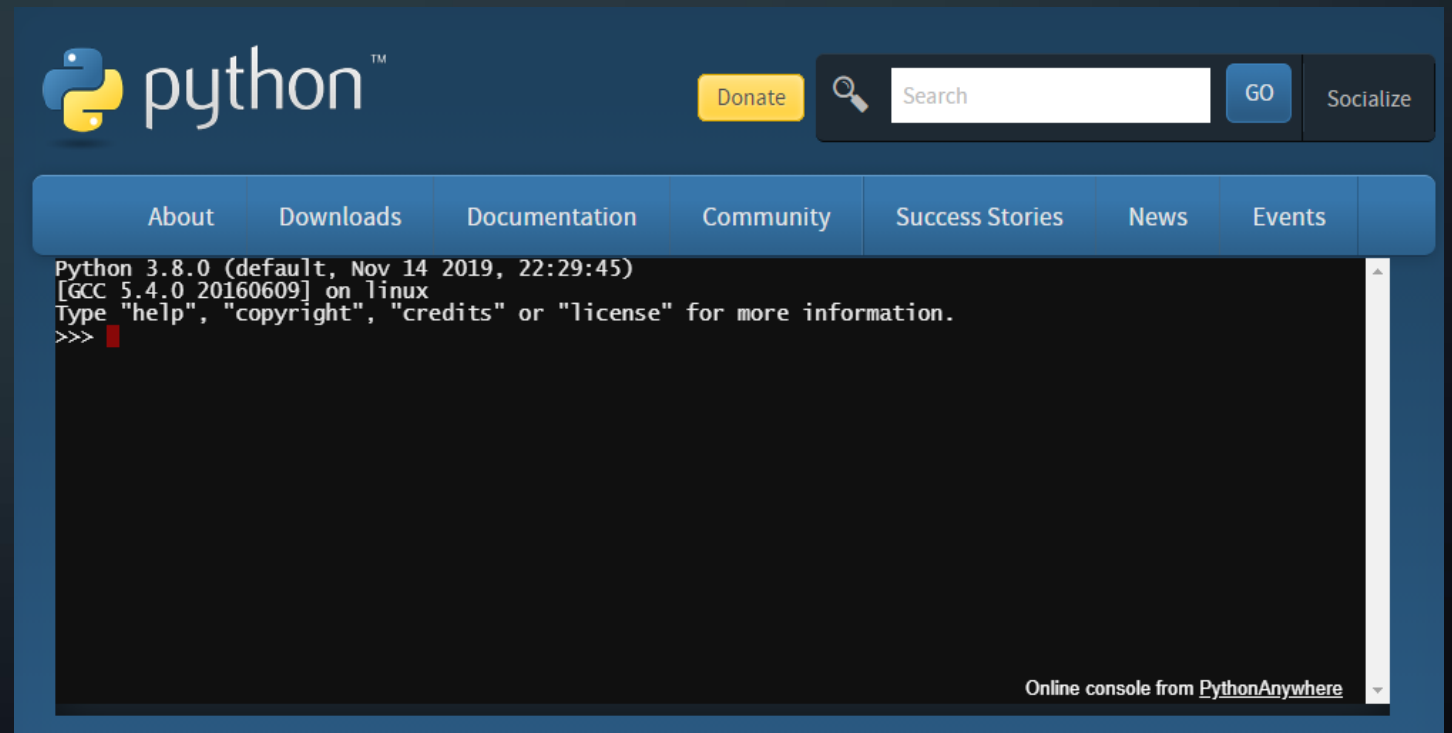
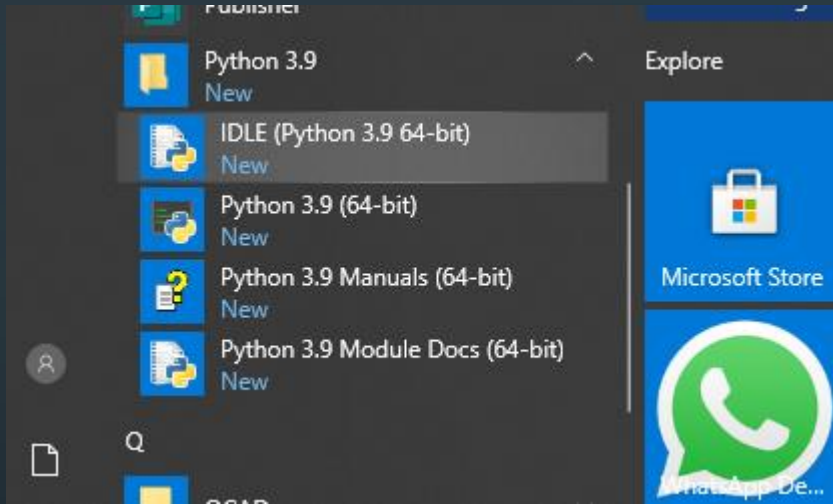
# INSTALLING PYTHON



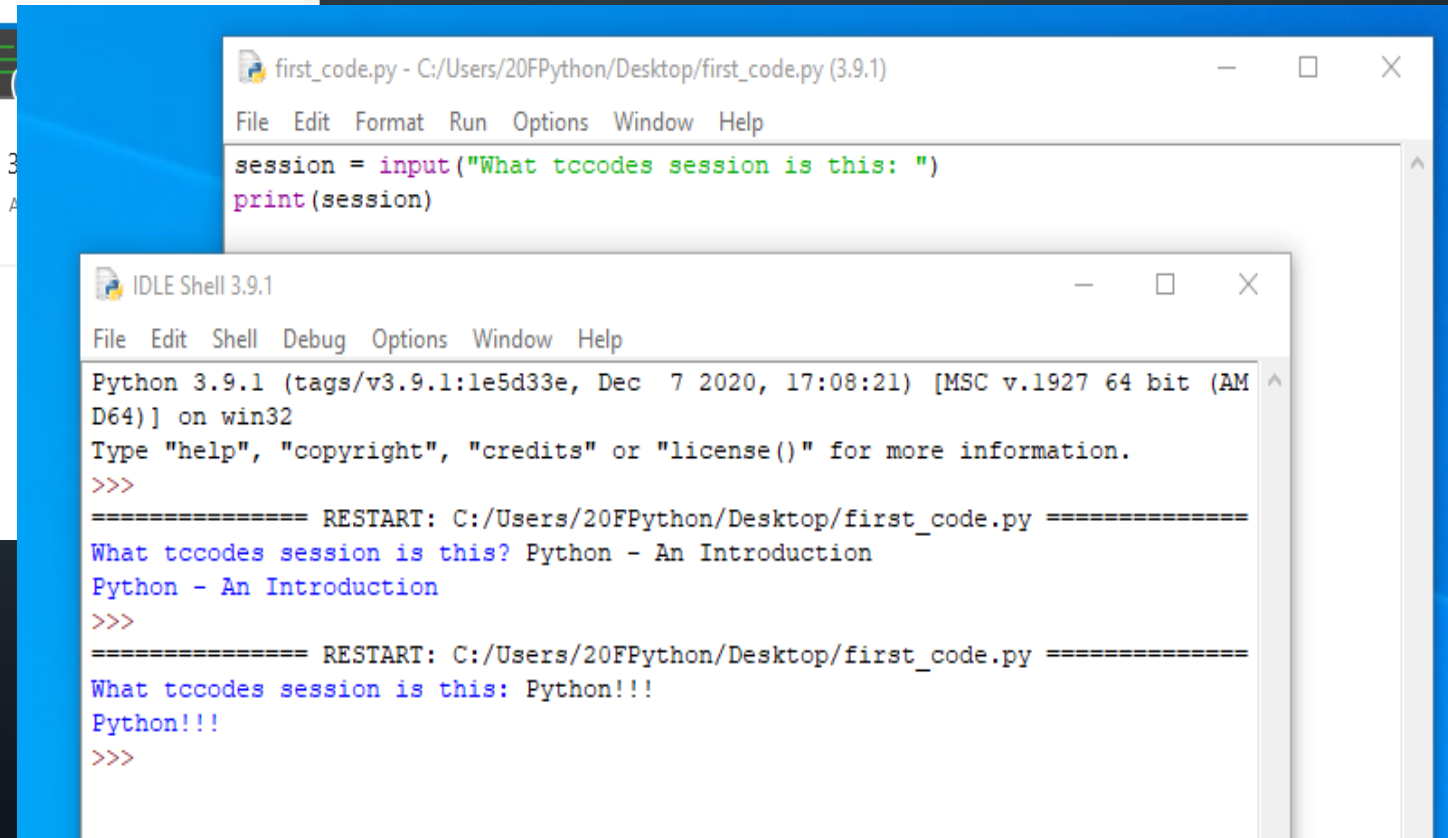
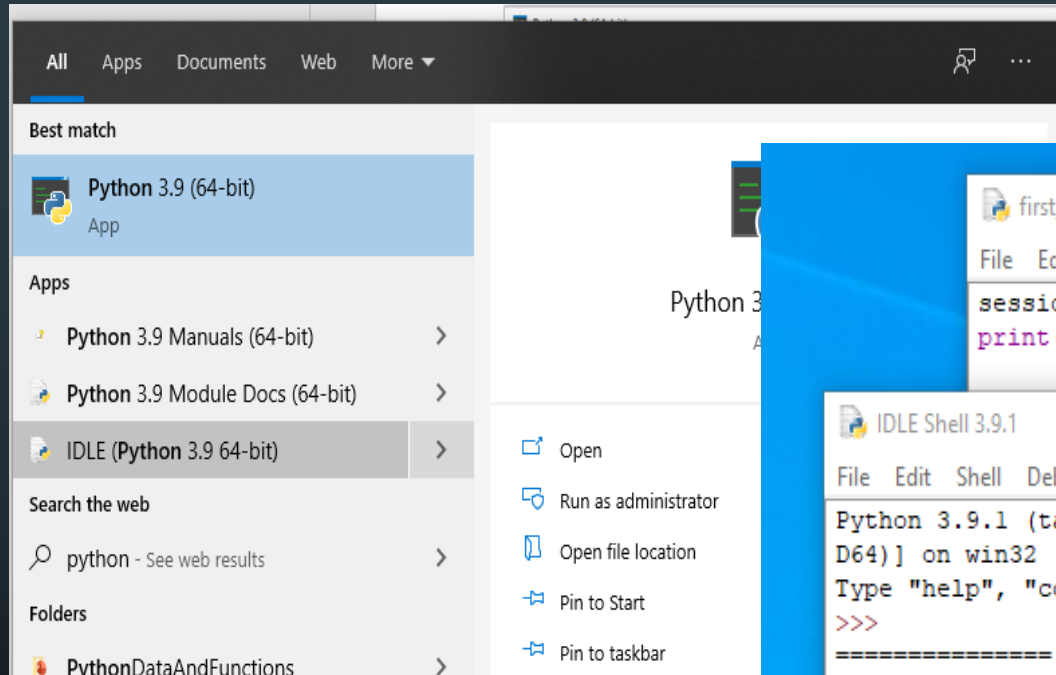


# INSTALLING PYTHON

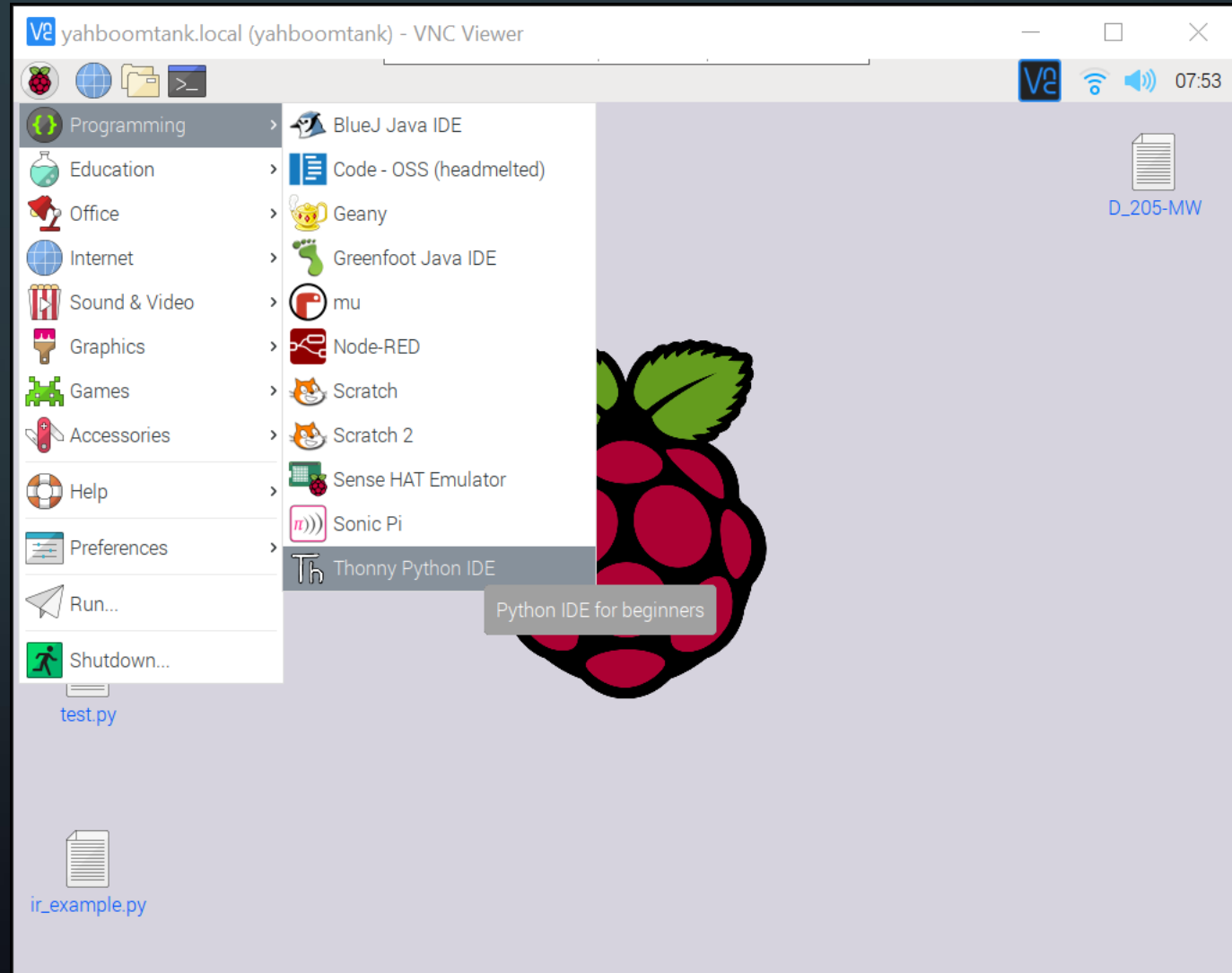
# LAUNCH PYTHON - INTERACTIVE SHELL



# LAUNCH PYTHON - IDLE



# PYTHON ON RASPBERRY PI



# Download Visual Studio Code

Free and built on open source. Integrated Git, debugging and extensions.

## VISUAL STUDIO CODE - INSTALLATION

↓ Windows

Windows 7, 8, 10

↓ .deb

Debian, Ubuntu

↓ .rpm

Red Hat, Fedora, SUSE

↓ Mac

macOS 10.10+

User Installer	64 bit	32 bit	ARM
System Installer	64 bit	32 bit	ARM
.zip	64 bit	32 bit	ARM

.deb	64 bit	ARM	ARM 64
.rpm	64 bit	ARM	ARM 64
.tar.gz	64 bit	ARM	ARM 64

Snap Store

## Overview

SETUP

GET STARTED

USER GUIDE

LANGUAGES

NODE.JS /  
JAVASCRIPT

TYPESCRIPT

PYTHON

JAVA

C++

CONTAINERS

AZURE

REMOTE

# Thanks for downloading VS Code for Windows!

Download not starting? Try this direct download link.

# VISUAL STUDIO CODE - INSTALLATION

Visual Studio Code is a lightweight but powerful source code editor which runs on your desktop and is available for Windows, macOS and Linux. It comes with built-in support for JavaScript, TypeScript and Node.js and has a rich ecosystem of extensions for other languages (such as C++, C#, Java, Python, PHP, Go) and runtimes (such as .NET and Unity). Begin your journey with VS Code with these [introductory videos](#).

## Visual Studio Code in Action

```
4 var server = express();  
5 server.use(bodyParser.json);
```

GETTING STARTED

VS Code in Action

Top Extensions

First Steps

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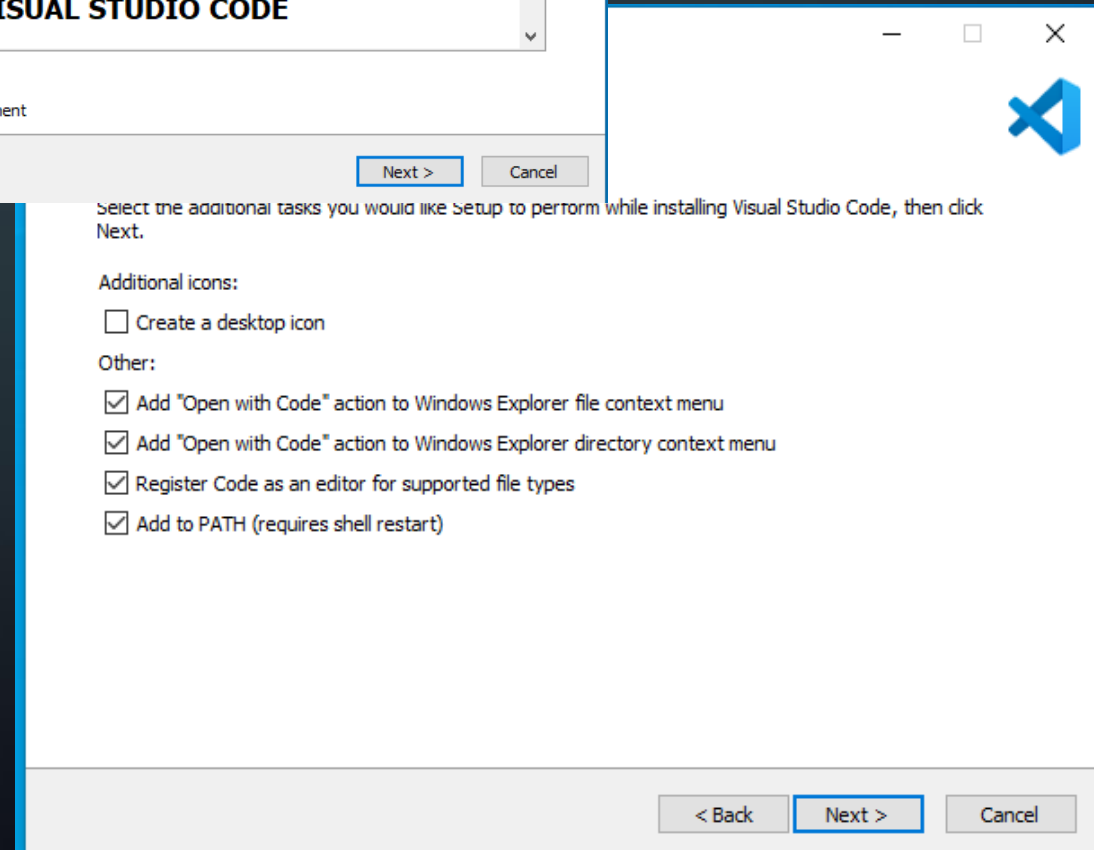
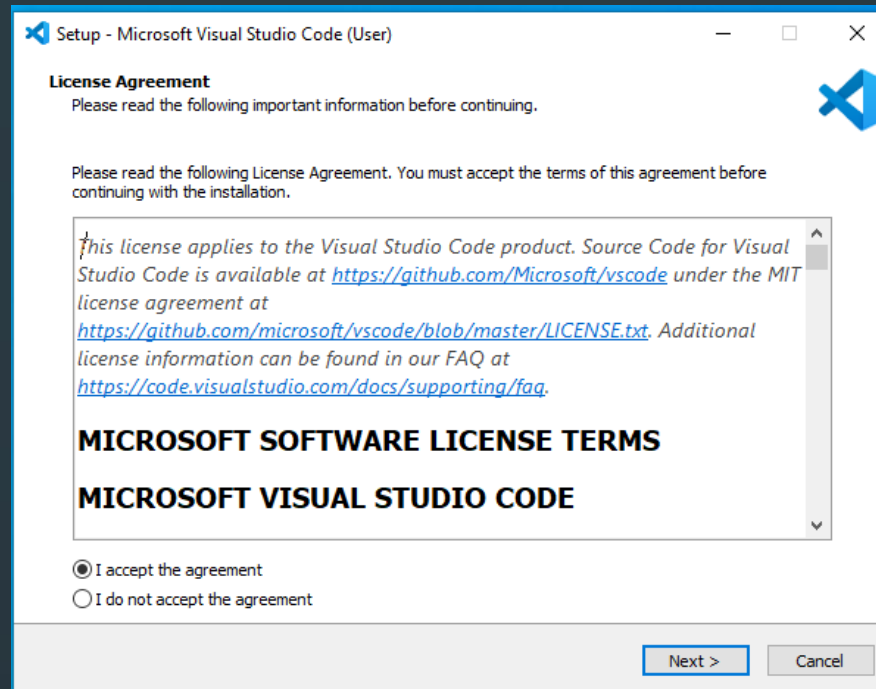
[Follow @code](#)

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# VISUAL STUDIO CODE - INSTALLATION

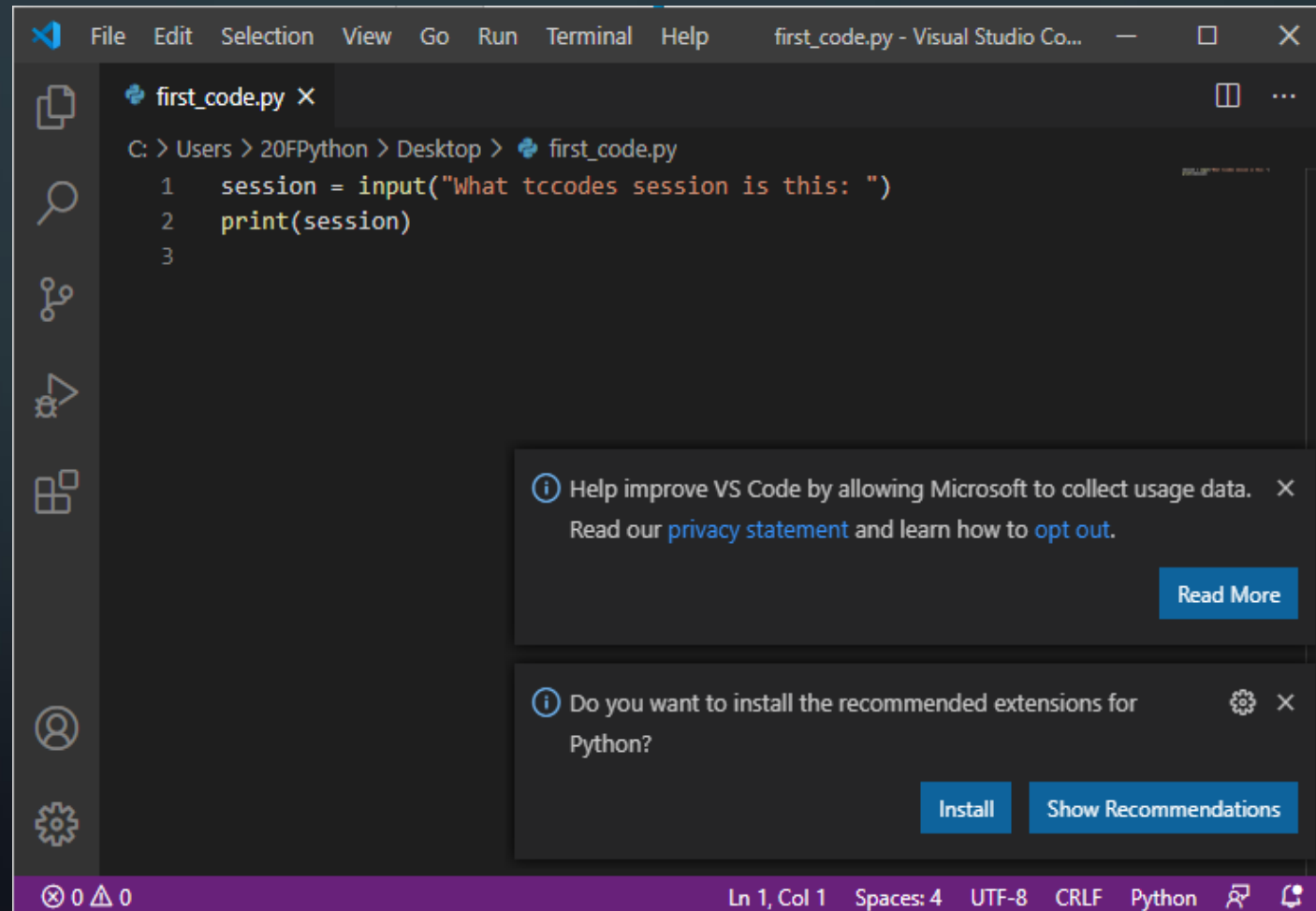
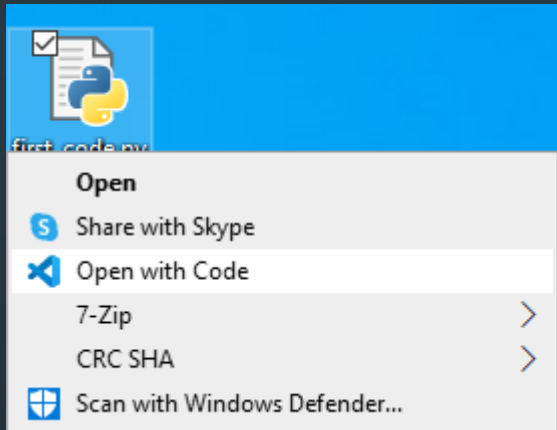


# VISUAL STUDIO CODE - INSTALLATION

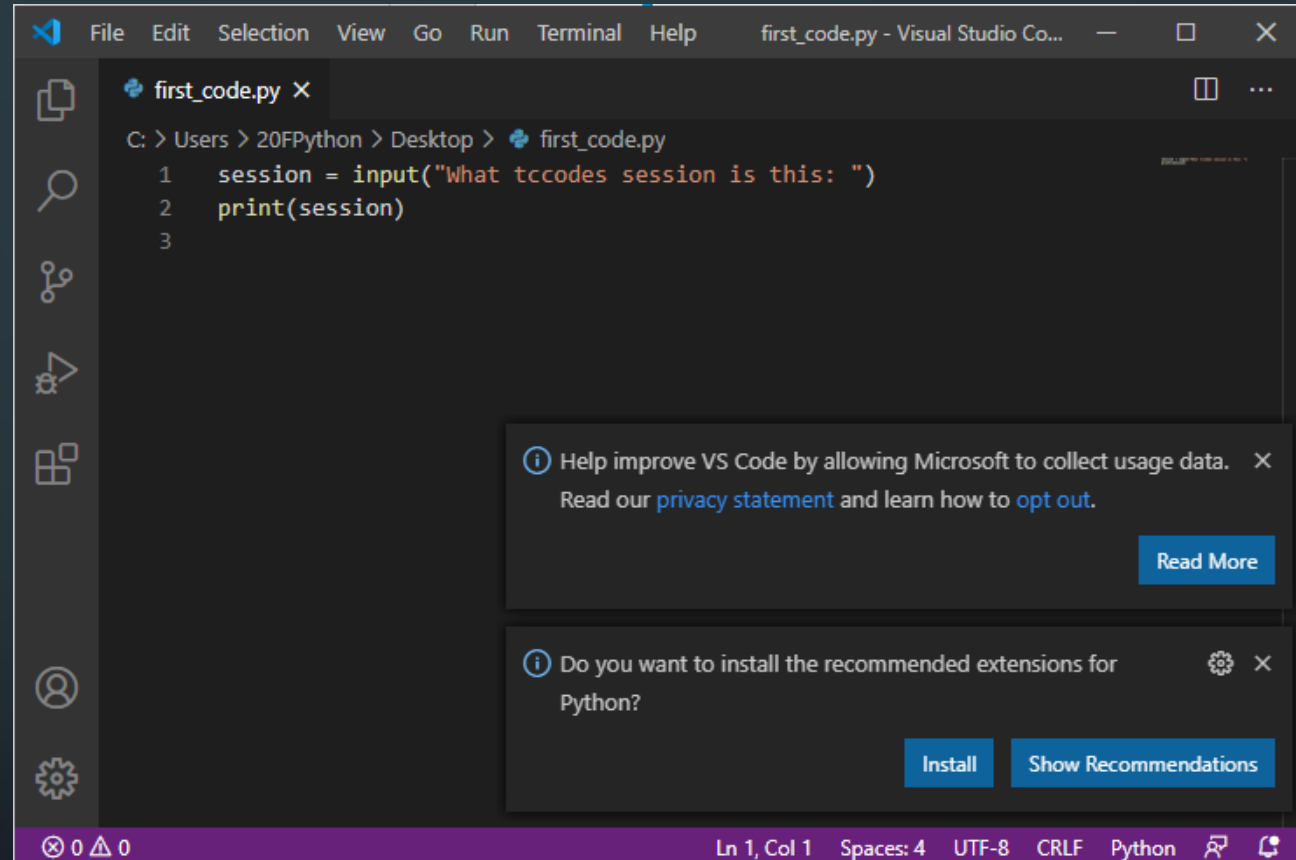
```
sudo apt install code
```



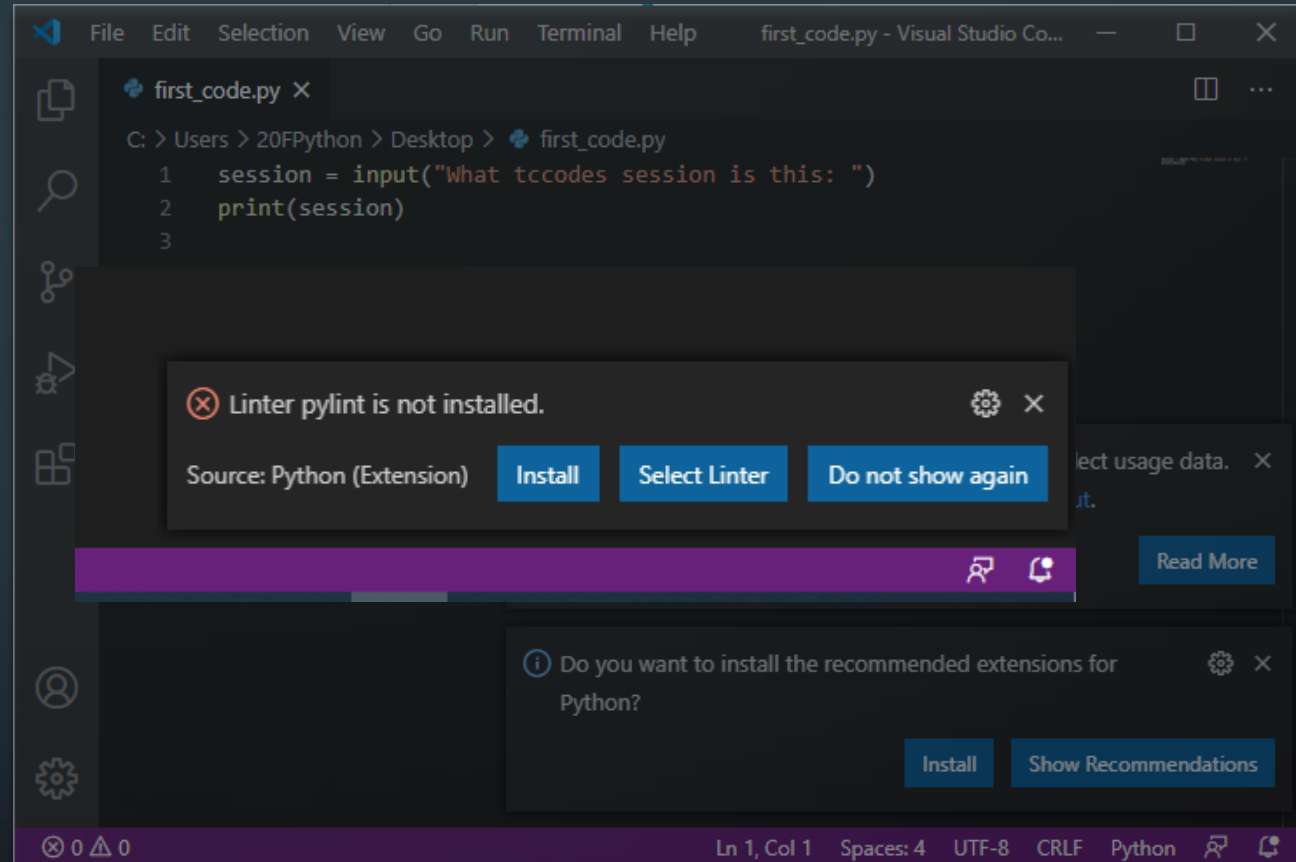
# CREATE, EDIT, RUN – PYTHON ON VS CODE



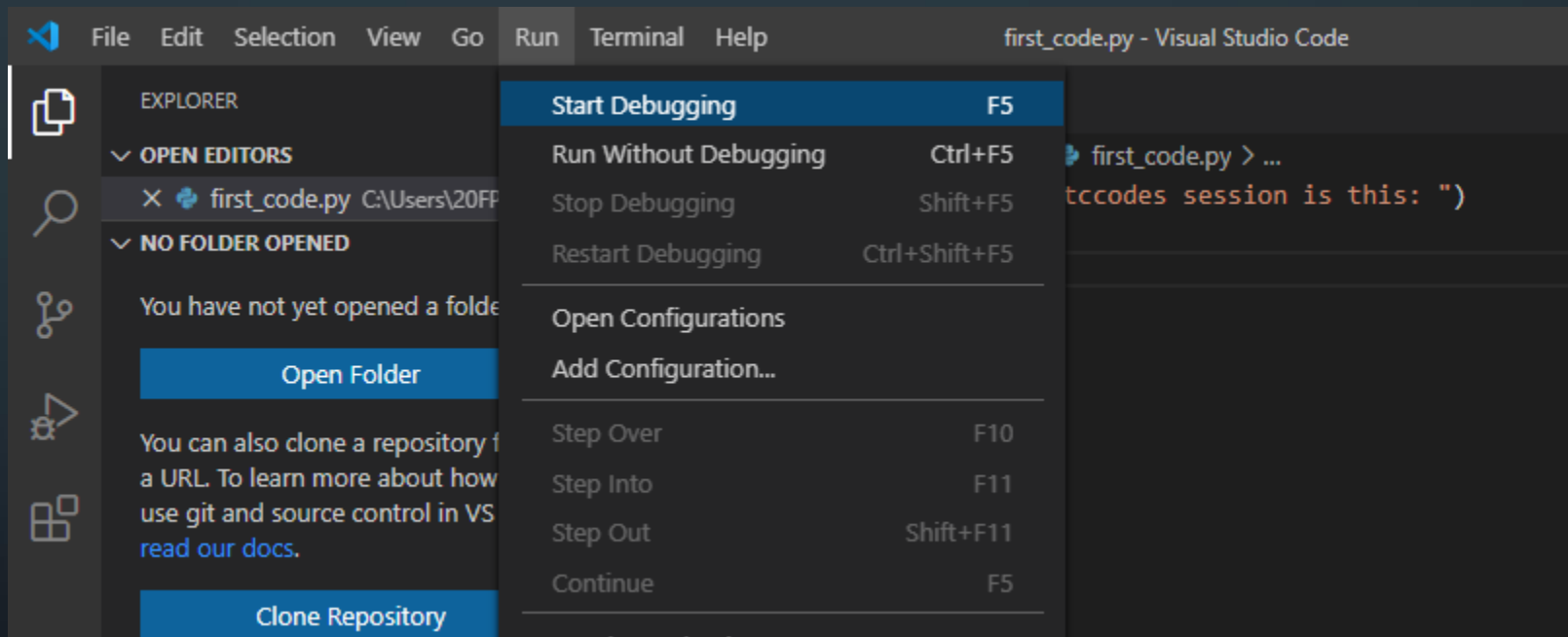
# INSTALLING VS CODE EXTENSION FOR PYTHON



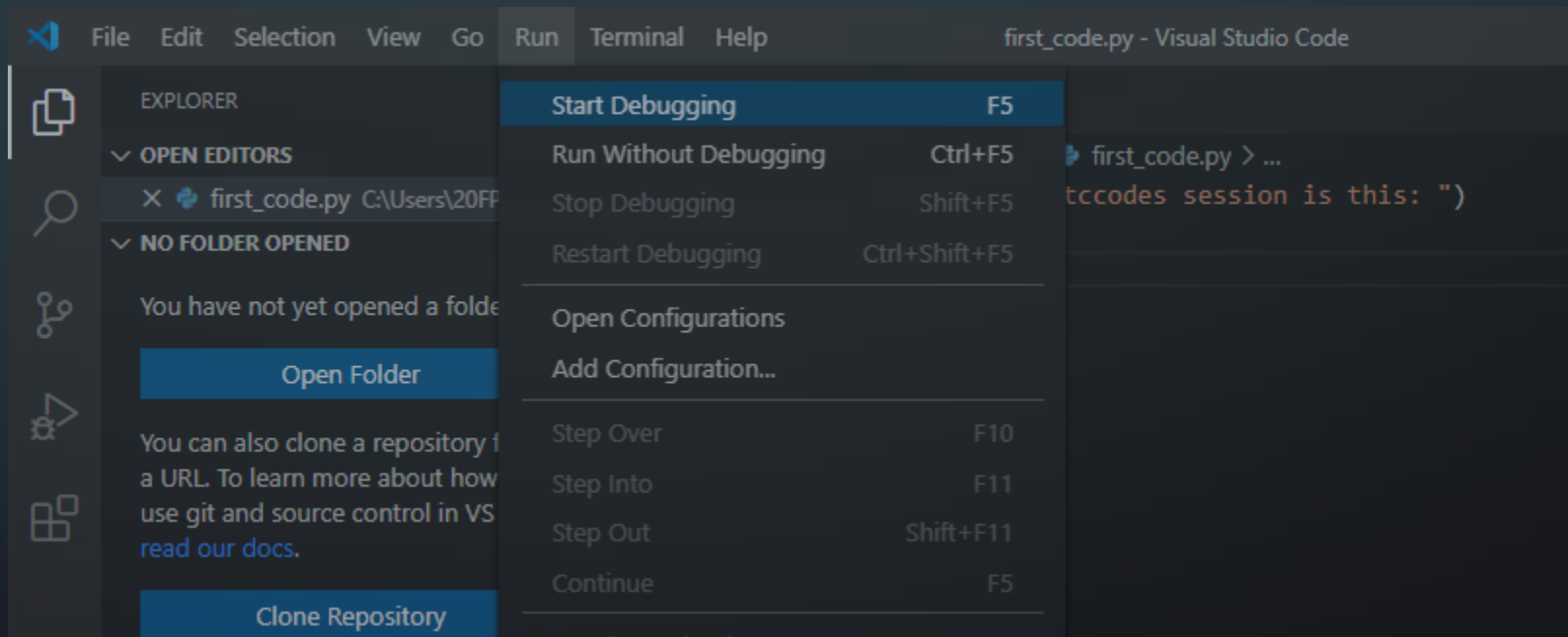
# INSTALLING PYTHON LINTER



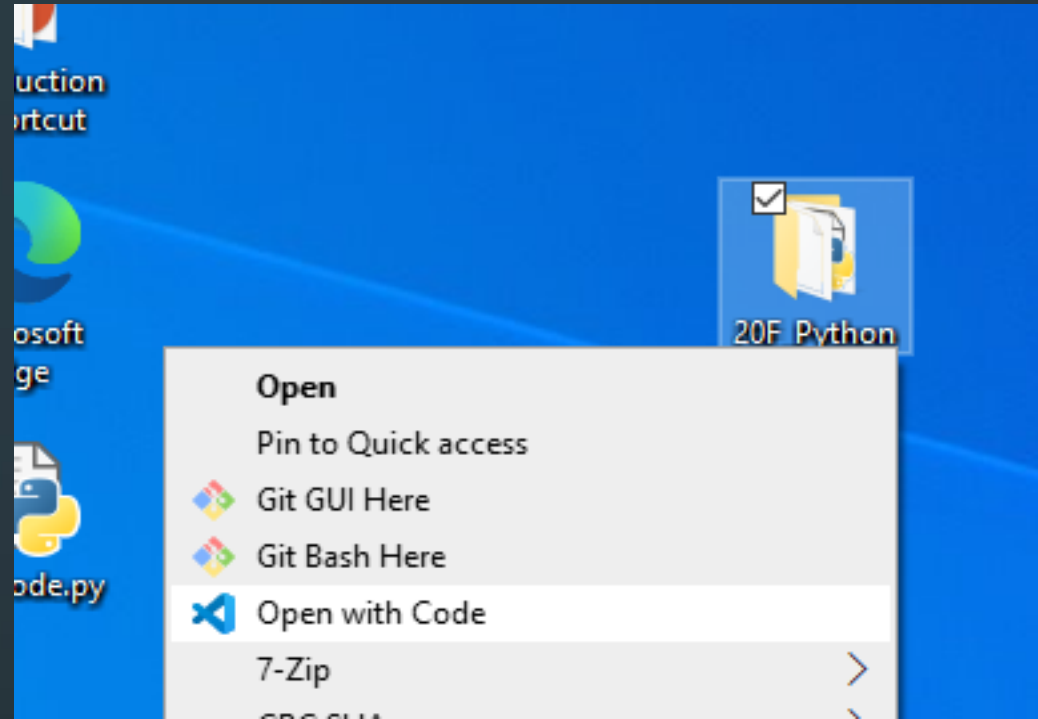
# EDIT AND RUN PYTHON IN VS CODE



# EDIT AND RUN PYTHON IN VS CODE



# PROJECT FOLDERS



PROBLEMS

OUTPUT

DEBUG CONSOLE

TERMINAL

2: powershell



Windows PowerShell

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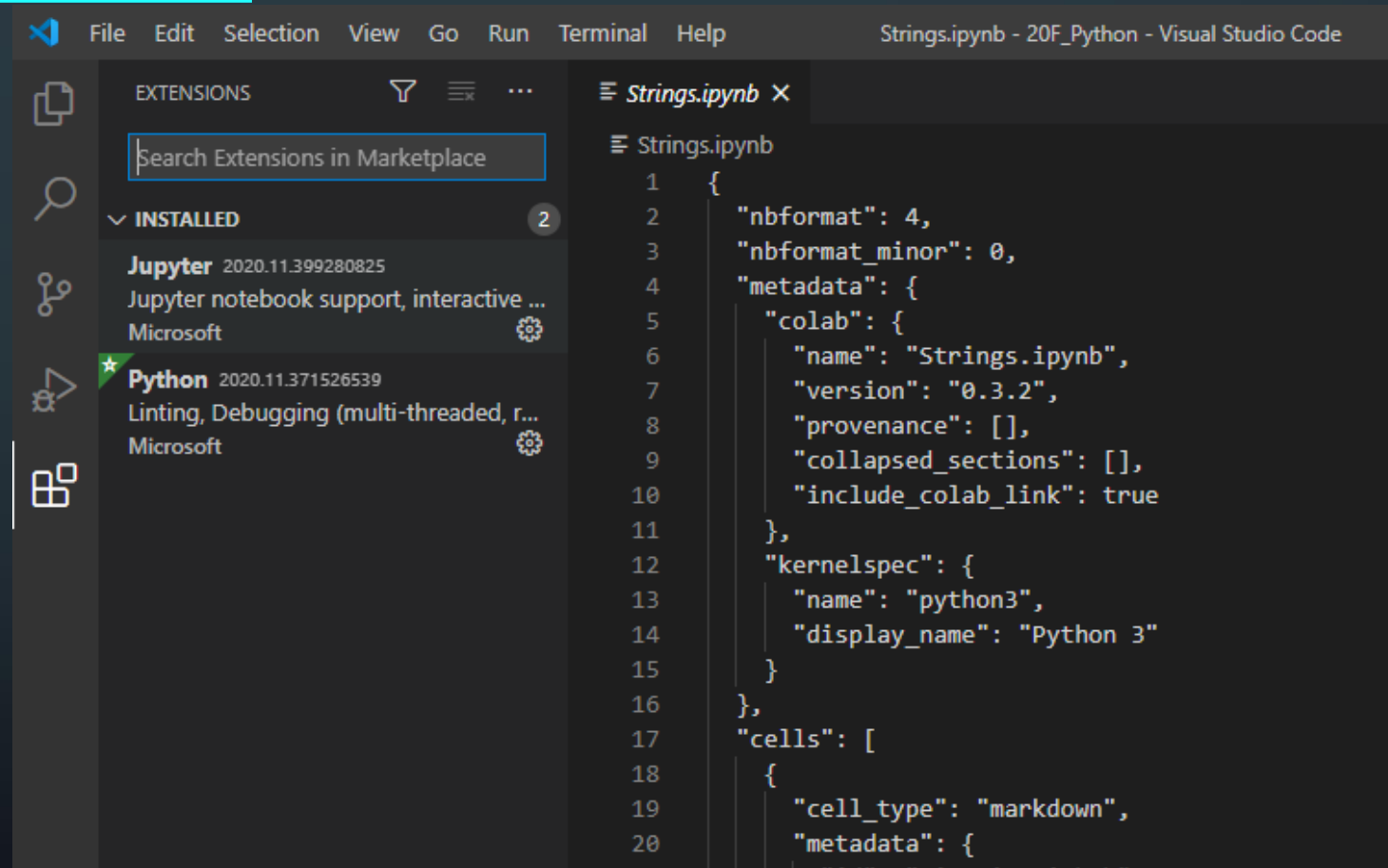
Try the new cross-platform PowerShell <https://aka.ms/pscore6>

```
PS C:\Users\20FPython\Desktop\20F_Python> wget -O guessing_game.py https://bit.ly/K2-p
```

# VS CODE – IDE – EDIT AND DEBUG

```
wget -O guessing_game.py https://bit.ly/K2-python-guessing-game
```

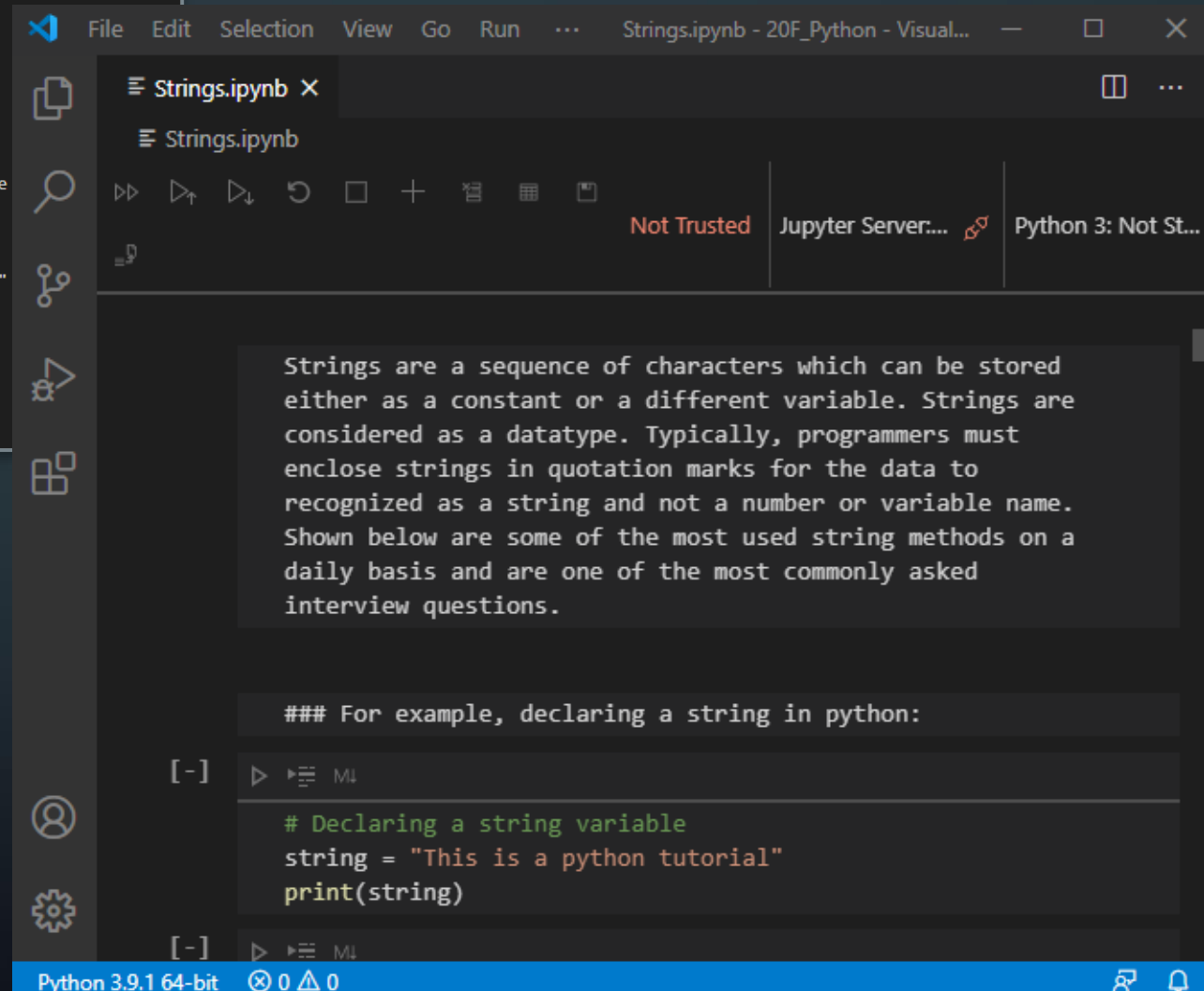
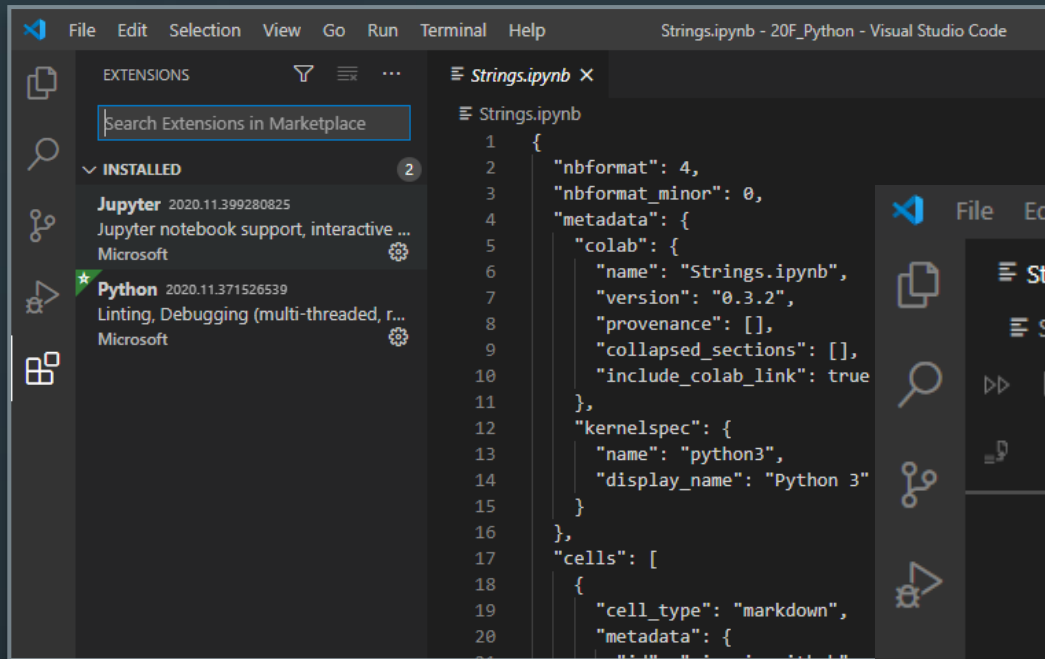
# WORKING WITH JUPYTER NOTEBOOKS IN VISUAL STUDIO CODE






# WORKING WITH JUPYTER NOTEBOOKS IN VISUAL STUDIO CODE

- DEMO (Windows install)



https://git-scm.com/doc

 --local-branching-on-the-cheap

Search entire site...

About

Documentation

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## Documentation


### Reference

 **Reference Manual**

The official and comprehensive **man pages** that are included in the Git package itself.


Quick reference guides: [GitHub Cheat Sheet](#) | [Visual Git Cheat Sheet](#)

### Book

 **Pro Git**


The entire **Pro Git book** written by Scott Chacon and Ben Straub is available to [read online for free](#). Dead tree versions are available on [Amazon.com](#).

### Videos



**Git Basics:**  
What is Version Control?

Episode #1



**Git Basics:**  
What is Git?

Episode #2

# GIT AND GITHUB

- SEE SHORT TUTORIAL AT
- [Introduction to Git - Learn | Microsoft Docs](#)

PROBLEMS

OUTPUT

DEBUG CONSOLE

TERMINAL

2: powershell



Windows PowerShell

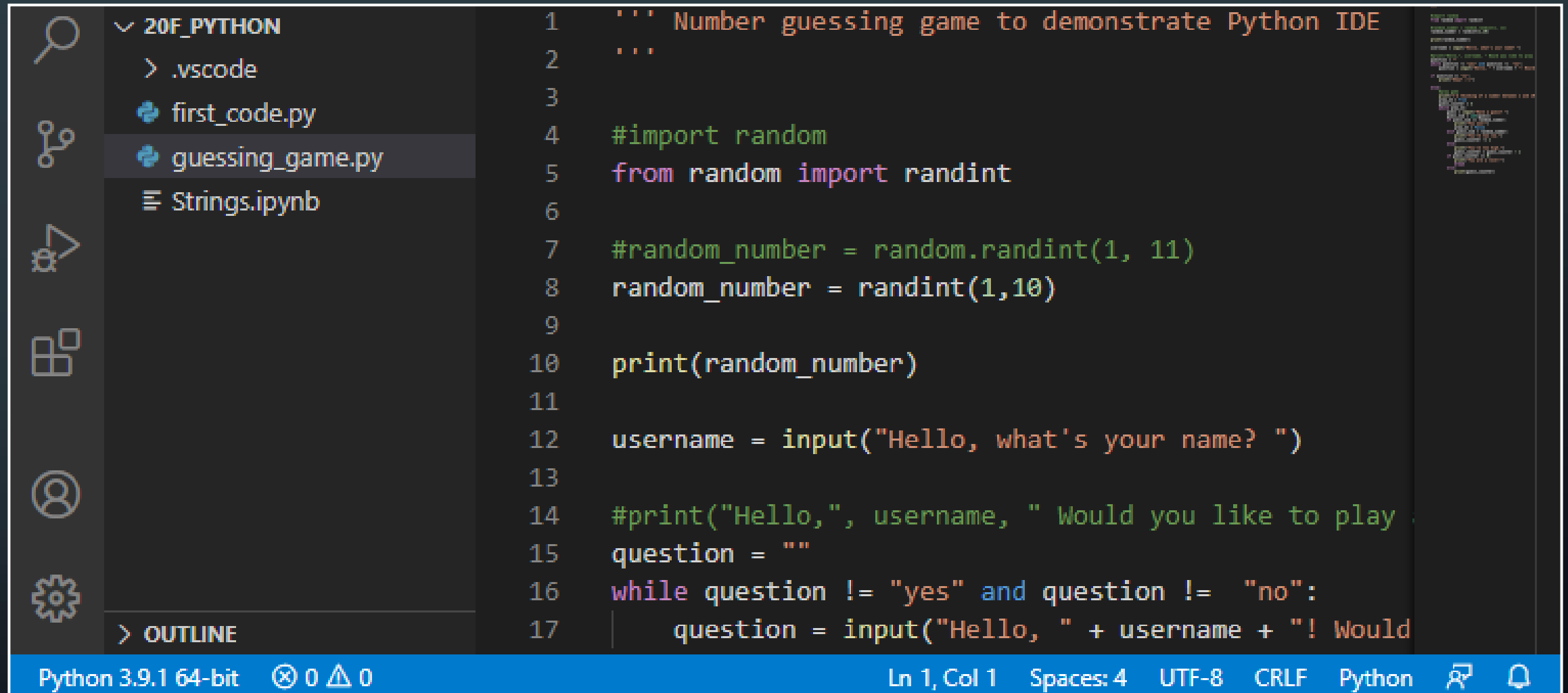
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Try the new cross-platform PowerShell <https://aka.ms/pscore6>

```
PS C:\Users\20FPython\Desktop\20F_Python> wget -O guessing_game.py https://bit.ly/K2-p
```

# VS CODE – IDE – EDIT AND DEBUG

```
wget -O guessing_game.py https://bit.ly/K2-python-guessing-game
```




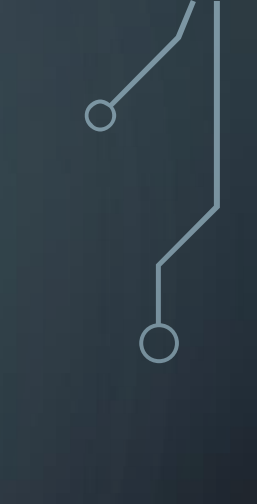
```
1  ''' Number guessing game to demonstrate Python IDE
2  '''
3
4  #import random
5  from random import randint
6
7  #random_number = random.randint(1, 11)
8  random_number = randint(1,10)
9
10 print(random_number)
11
12 username = input("Hello, what's your name? ")
13
14 #print("Hello,", username, " Would you like to play ")
15 question = ""
16 while question != "yes" and question != "no":
17     question = input("Hello, " + username + "! Would you like to play? ")
```

Python 3.9.1 64-bit 0 0 Ln 1, Col 1 Spaces: 4 UTF-8 CRLF Python

## GUESSING GAME EXAMPLE IN VS CODE



# CPYTHON

- CPython is the reference implementation of the Python programming language. Written in C and Python, CPython is the default and most widely used implementation of the language.
  - CPython can be defined as both an interpreter and a compiler as it compiles Python code into bytecode before interpreting it.
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