Module 01 – Basic Concepts

Agenda

- What is Python?
- Python – Getting Started
- Python is interpreted language
- Python first program
- Indentations
- Error Messages

What is Python?

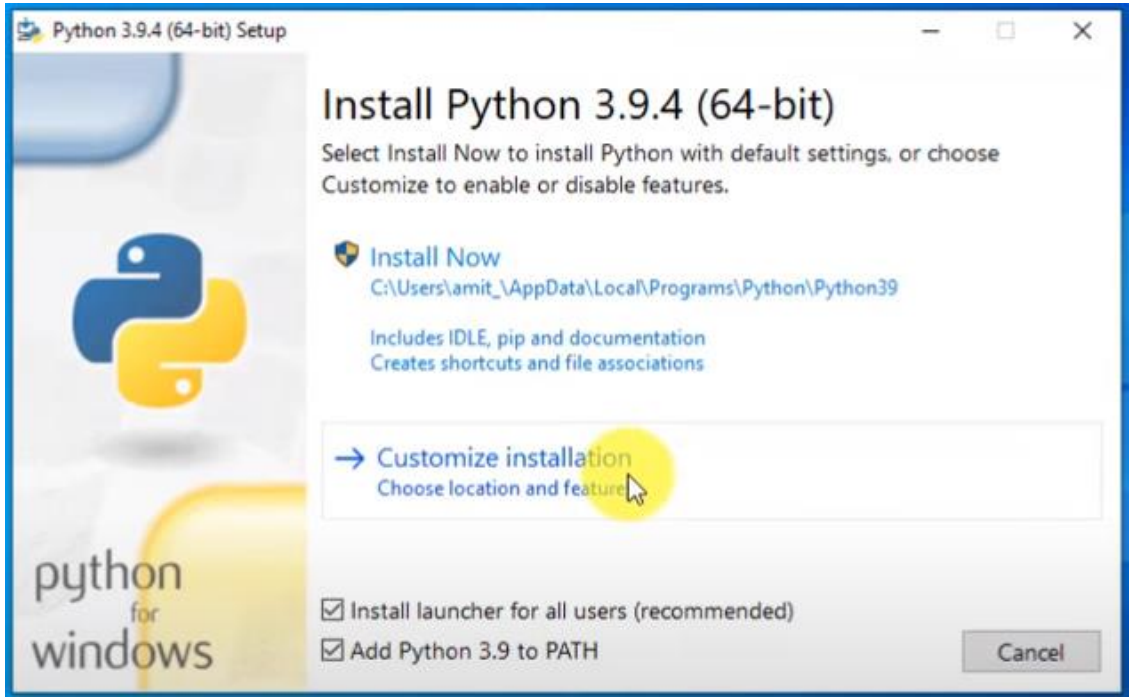
- Python is a widely used, interactive, general purpose interpreted language
- Python is stable, cross platform programming language
- Python is a high level and object-oriented programming language
- Python is an Open Source software, distributed under a liberal license
- Python is simple, intuitive, dynamic and is easy to read and understand
- Designed by Guido Rossum in the late eighties

Getting Python

- Where Do I Get Python?
- The most up-to-date and current source code, binaries, documentations, news, etc. are available at the official website of Python:
- – **Python Official Website :** http://www.python.org/
- Python documentation from the following site:
- – www.python.org/doc/
- Python download for Windows, Solaris, Linux:
- – http://www.python.org/download/
- If you are running a Linux (or most UNIX) system, you probably already have some python version installed on it.

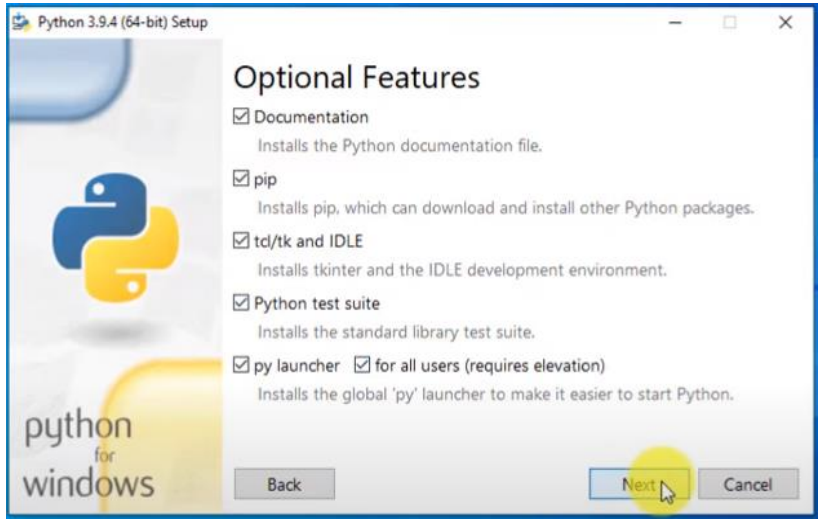
Python – Getting Started

1. Go to the download page on their website and click Python Version 3.9.9
2. Go to the bottom of the page and download the Windows or macOS installer
3. When launching the installer Check both boxes at the bottom
 and click Customize Installation:

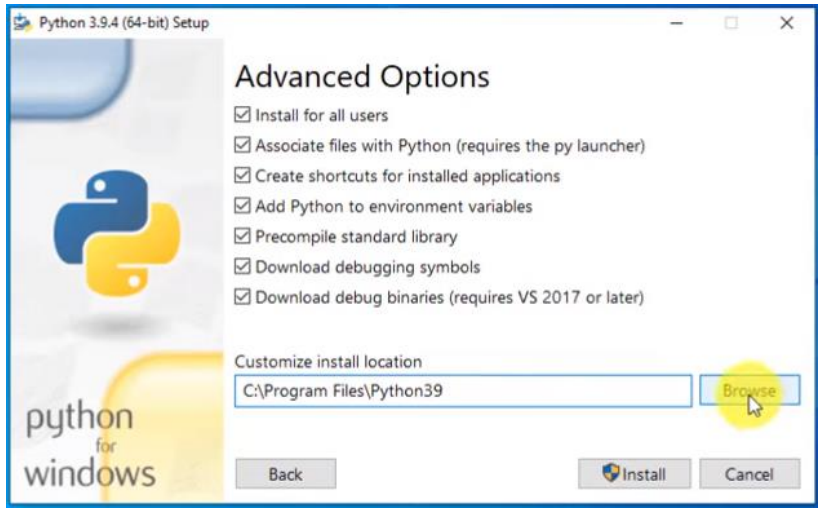


Python – Getting Started (cont.)

- 5. Check all the boxes at this page and click next:



- 6. Check all the boxes at this page also, and change the install location to the Program Files Folder and click Install:



Python VSCode Environment

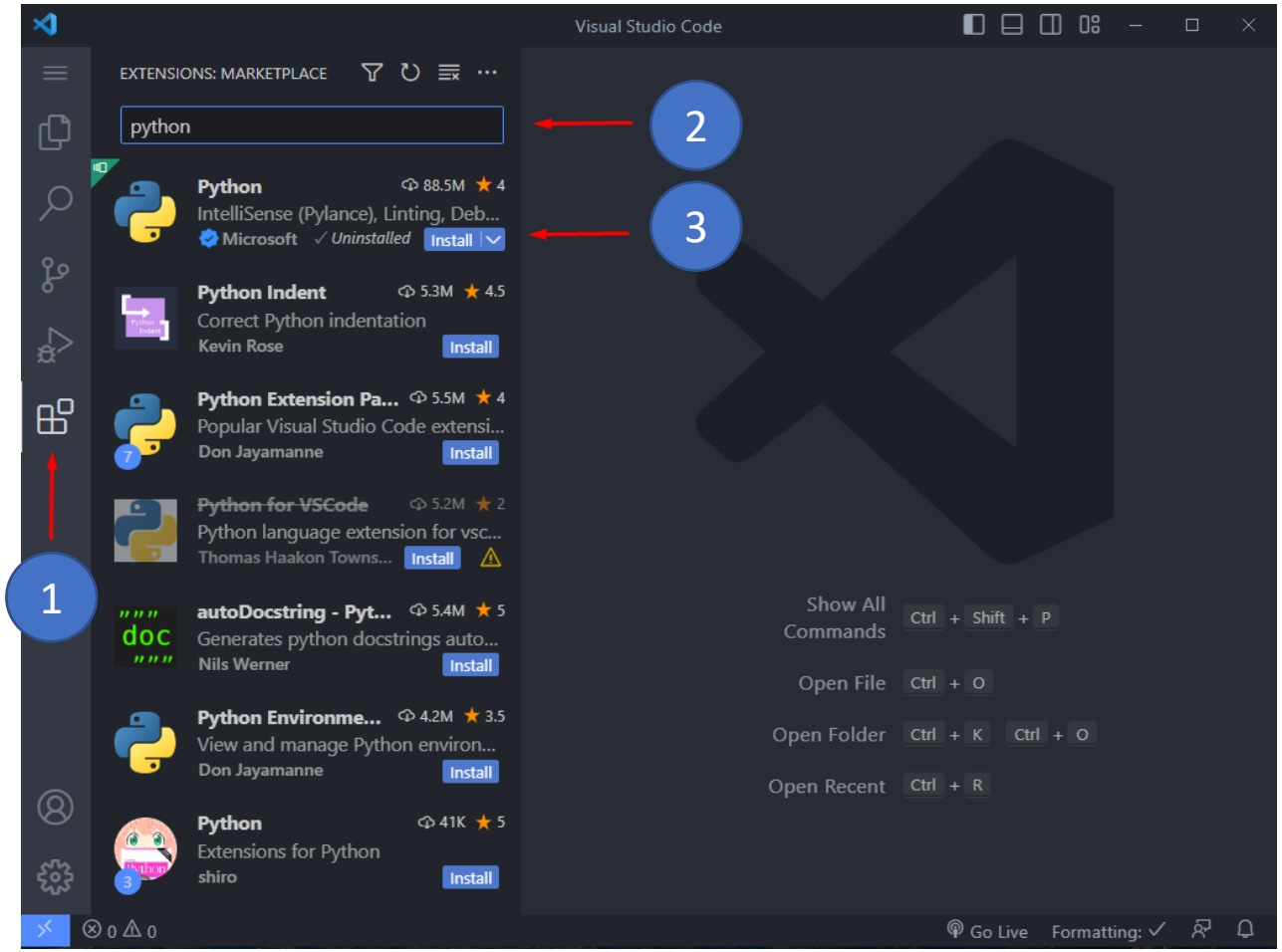
- VSCode is a popular code editor with extensive Python support, offering features like code completion, debugging, and an integrated terminal.
- With its vast extension ecosystem, VSCode allows developers to customize and enhance their Python development experience to suit their specific needs.
- VSCode's cross-platform compatibility and lightweight design make it a flexible choice for Python developers seeking a versatile and efficient coding environment.

Download Visual Studio Code

https://code.visualstudio.com/download

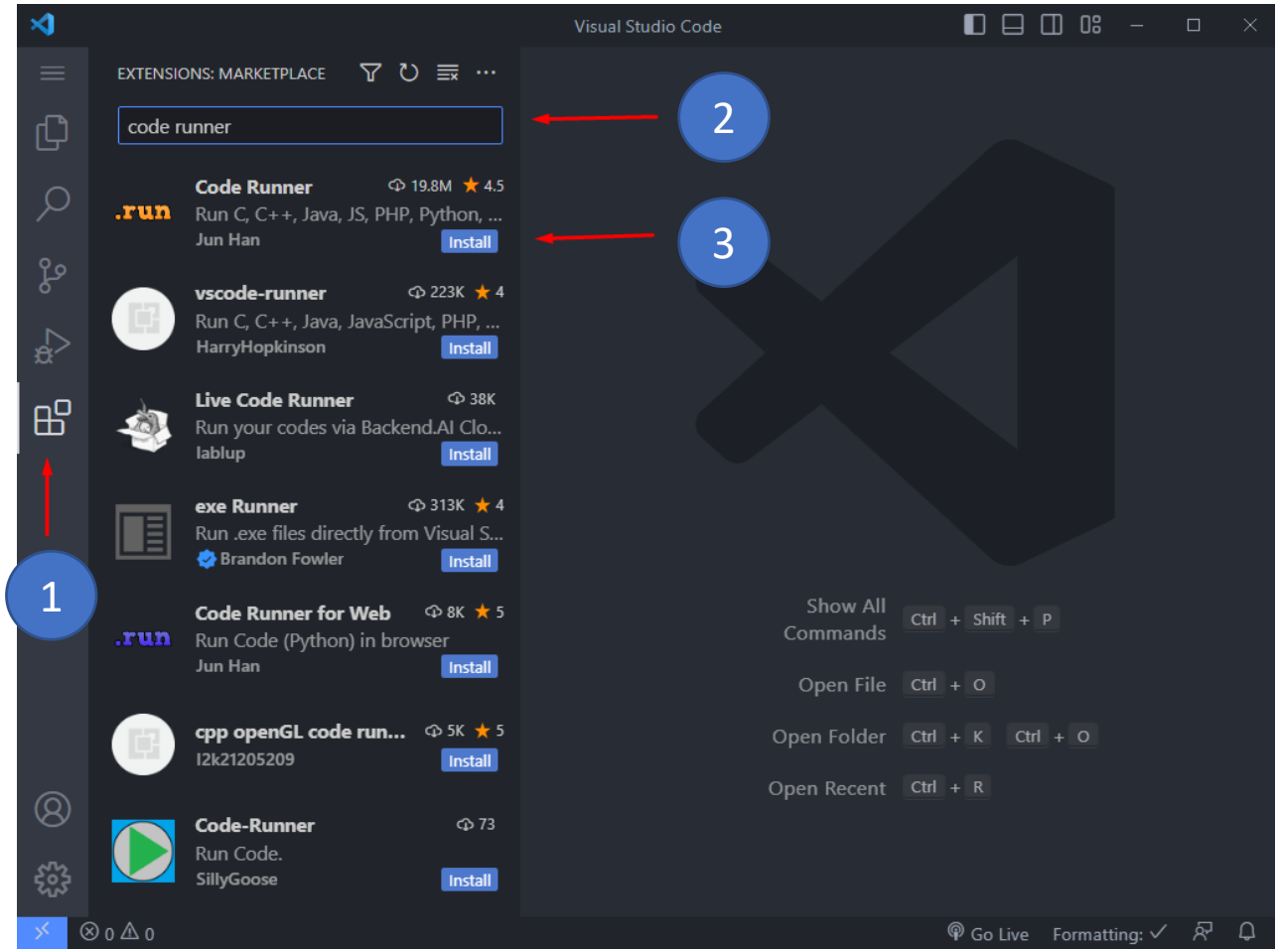
Setup VSCode for Python

1. Click on extension icon in navigation panel.
2. Write in search field “python” to find official Python extension.
3. Click “Install”



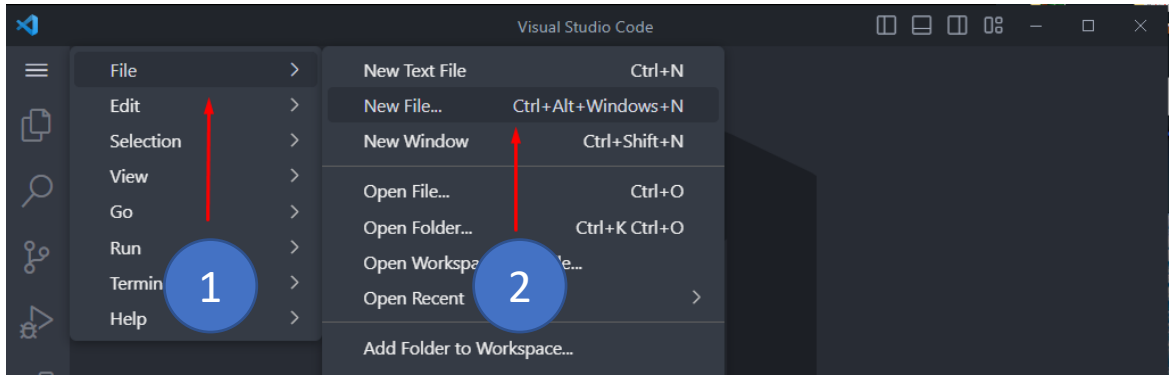
Setup RunTime extension

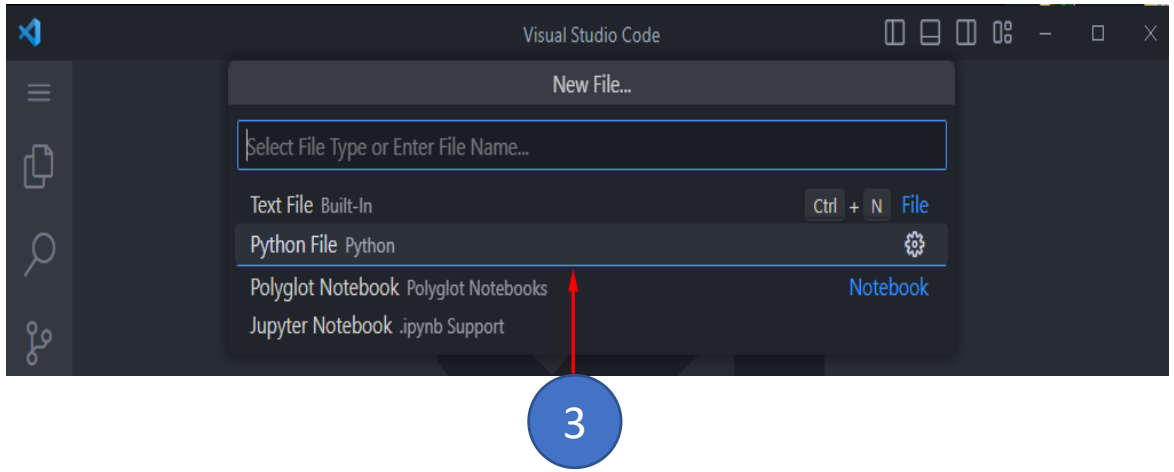
1. Click on extension icon in navigation panel.
2. Write in search field “code runner”.
3. Click “Install”



Creating new python file

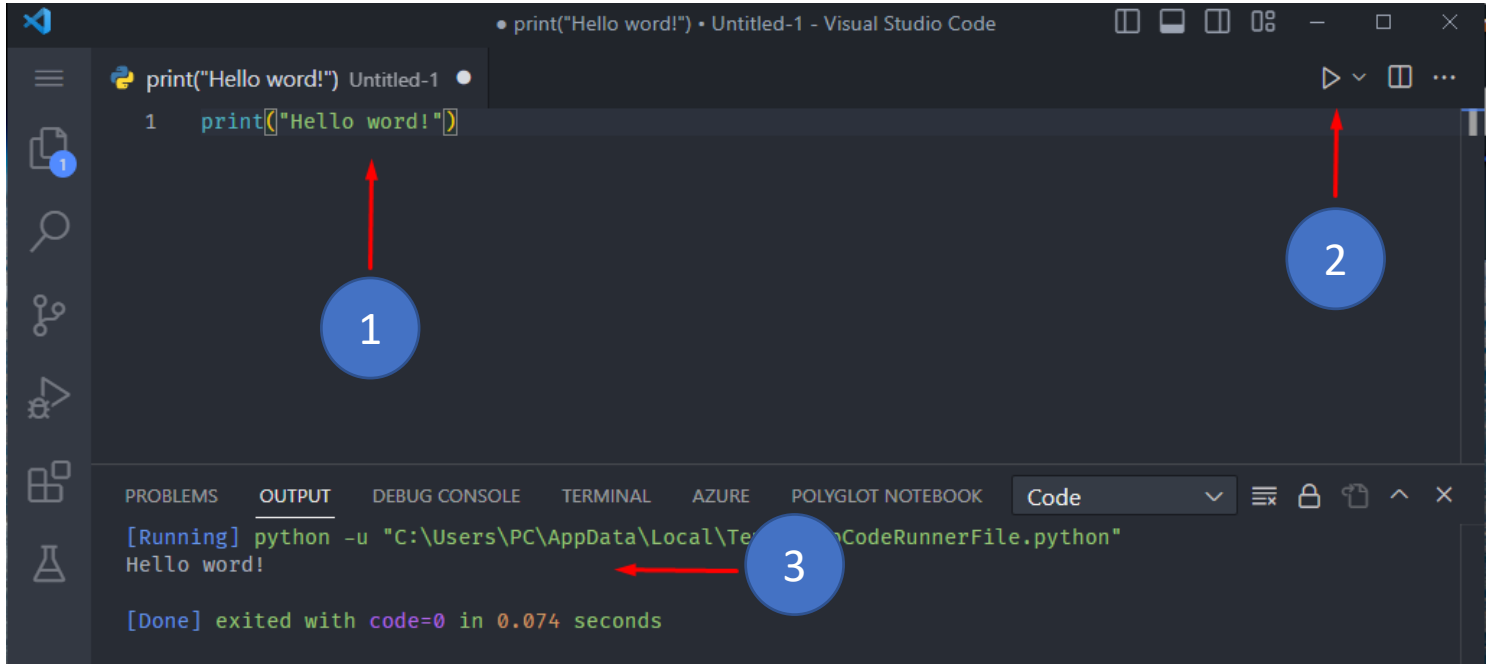
1. Click on “File” section
2. Then click “New File…” (Or just Ctrl + Alt + Win + N)
3. Click on “Python File” to create new one.





Running python

1. Write some code
2. Click on “Run” button
3. Sea output in below section



Python PyCharm Environment - alternative

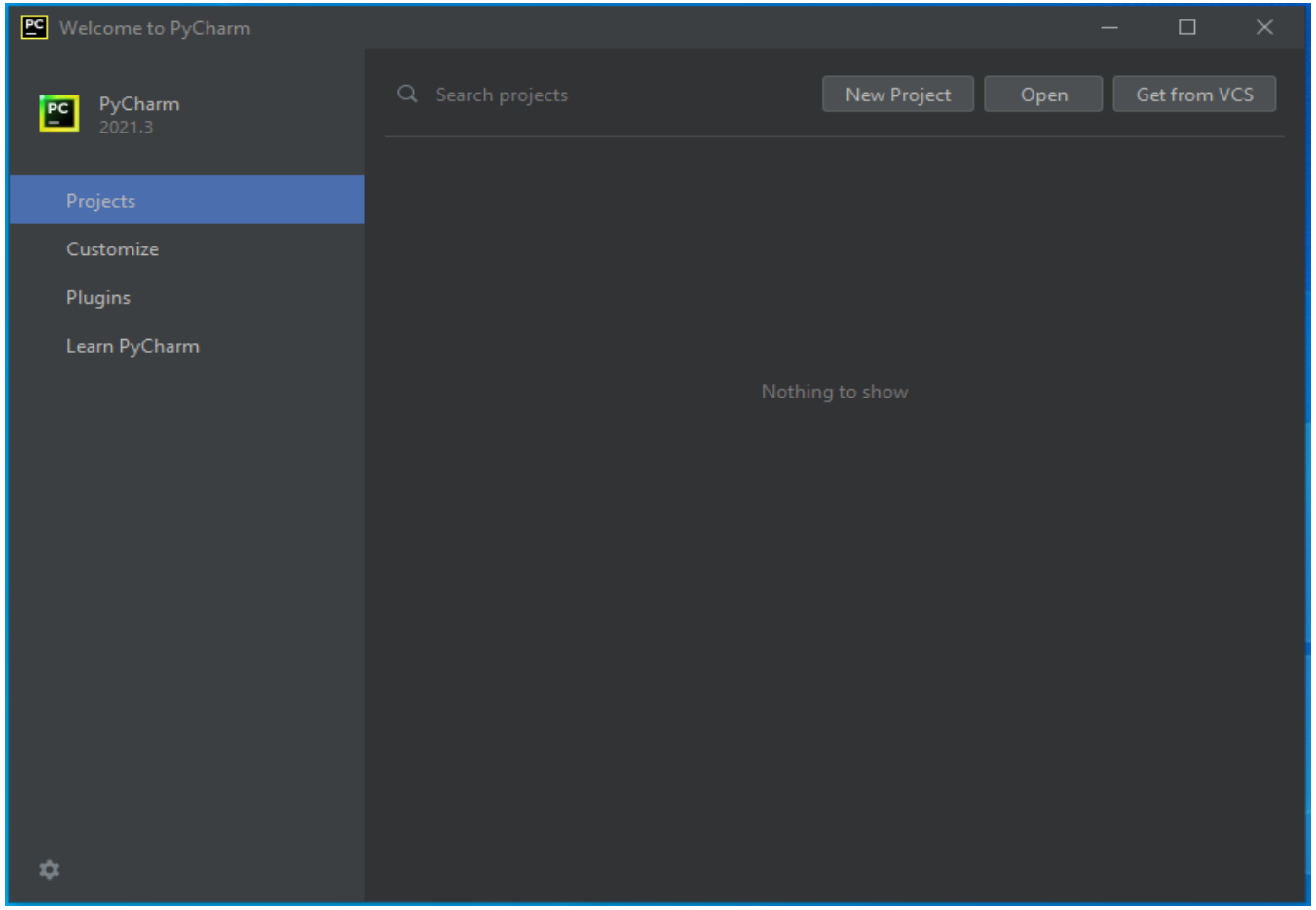
- PyCharm is an IDE for software development in Python
- It is used and loved by many because all it’s features
- It has easy to use and read debugger

PyCharm Community Edition

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

Opening New Project

When first opening PyCharm you will see this screen, press the new project button:

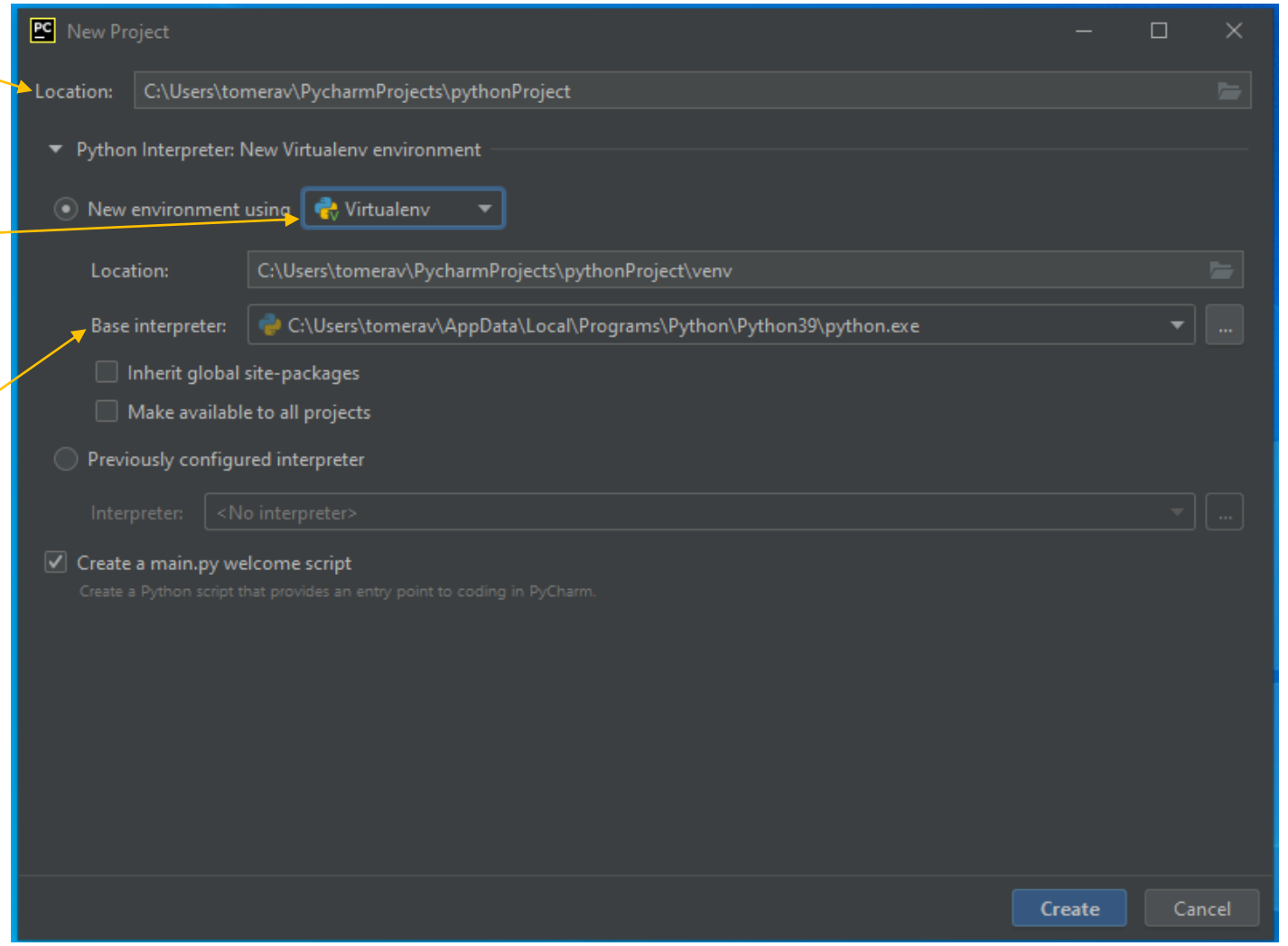


Opening New Project (contd.)

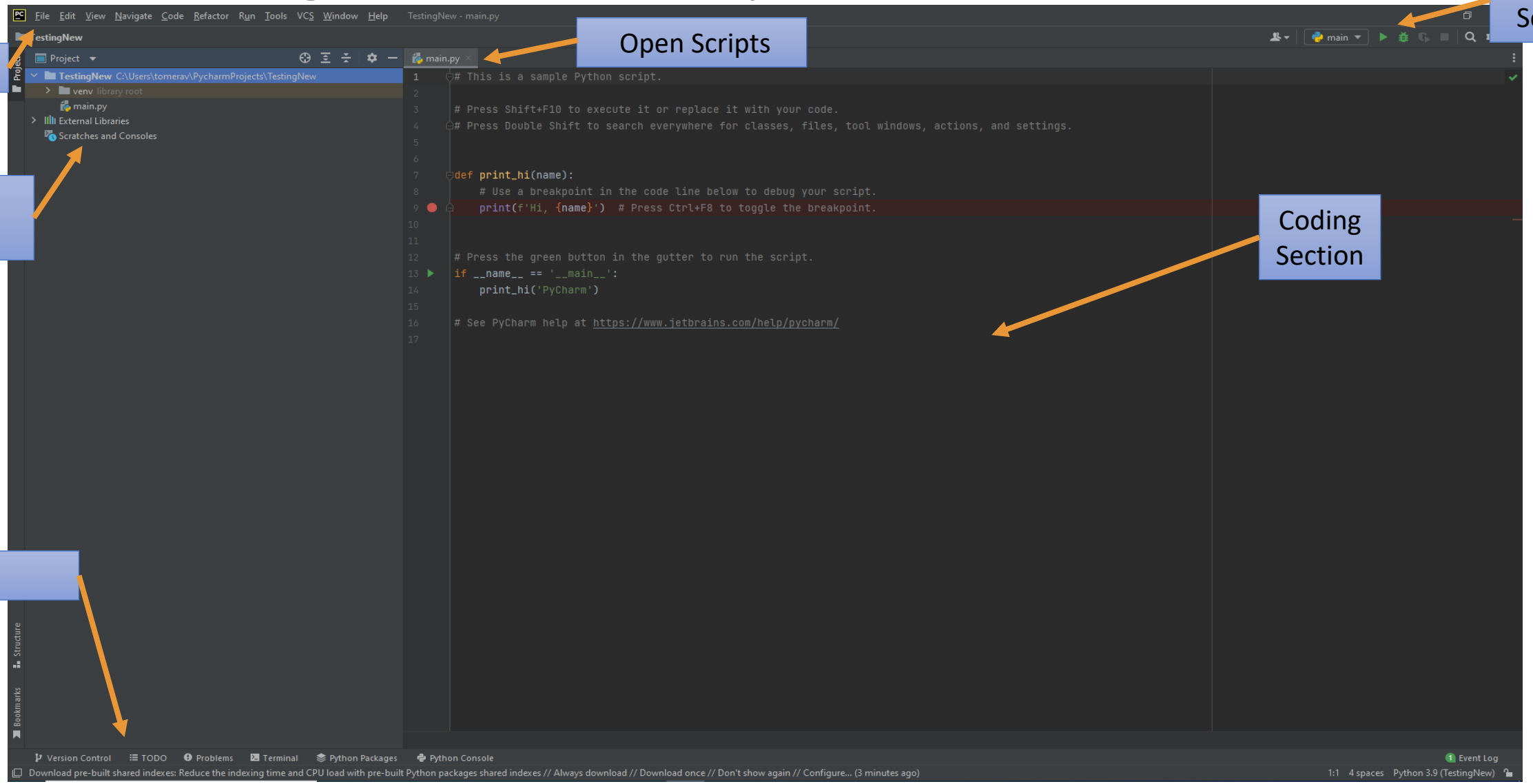
Project Location

Project Environment

Base interpreter



IDE – Integrated Development Environment



Python is interpreted language

- Python is an interpreted language. It means that our code processed at a real time, by interpreter, without compiling it before the execution.
- Interpreted code runs slower than a compiled one, because the interpreter must analyze each statement of the program each time it is executed.
- This run-time analysis is known as "interpretive overhead".

Python First program

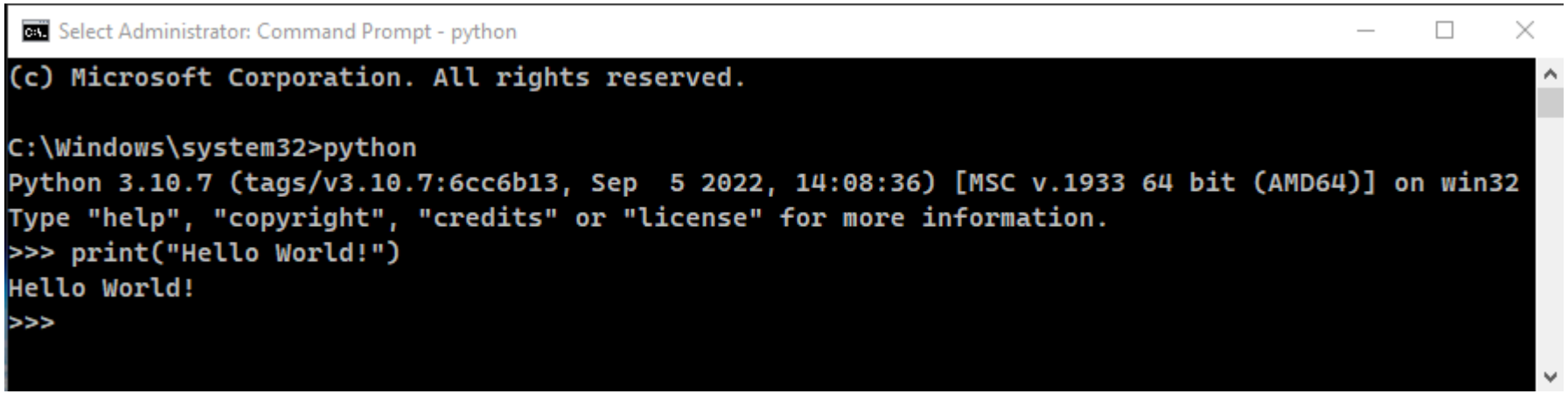
- One of the ways to run python code is to write a script file that contains python commands
- Python scripts usually have an extension of **.py**
- Lets start with a simple python script – first.py
    - Open any text editor or IDE
    - Save the first program as first.py
    - Type the following command in it:

```
print("Hello world!")
```

    - Run the script. If the commands are correct, python will execute the script

Python First program – cont’d

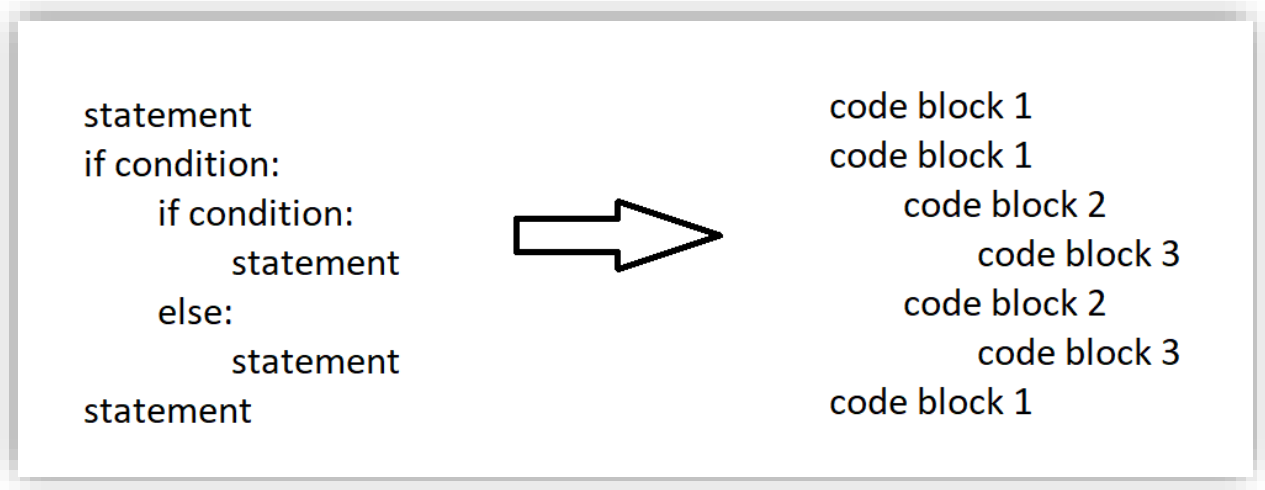
- Another way to run python commands is to run python shell – the interactive mode
- To do so, open shell or command processor (like *cmd*) and type python exe path and you will see the following output:



- In interactive mode, python interpreter is waiting for users commands and executes them as given.
- Whenever you exit the interactive mode, the commands are gone.

Python First program – cont'd

- One of the most important things for flow controls, functions definitions, classes and other block-defined statements is the fact that there is no braces to indicate blocks of code.
- Blocks of code are denoted by line indentation
- Indentations are represented by any number of spaces/tabs, but all statements within the same block must be indented the same.



Demo 01: Print your name

Demo

Demo 01: Print your name

```
print("Sela student!")
```

```
C:\Users\tomerav\PycharmProjects\Testing
Sela Student

Process finished with exit code 0
```

Console Methods

Demo

Demo Code: Console Methods

```
print("Head of text")
print(".")
print()
print(False)
print(666)
print(True)
print(29)
input()
```

```
C:\Users\tomerav\PycharmProjects\TestingNew\ve
Head of text
.

False
666
True
29
This is what input looks like in the console
```

Error Messages

- If you incorrectly type a statement or placed the statement in incorrect place, the interpreter will detect the error and tell you what it is and where it is located.
- For example, look at following code (This program contains one small error):

```
print("Hello")
   print("World")
```

- Non-treated will terminate the process with non-zero exit status.
- The interpreter prints an error message and its stack trace.

- Output:

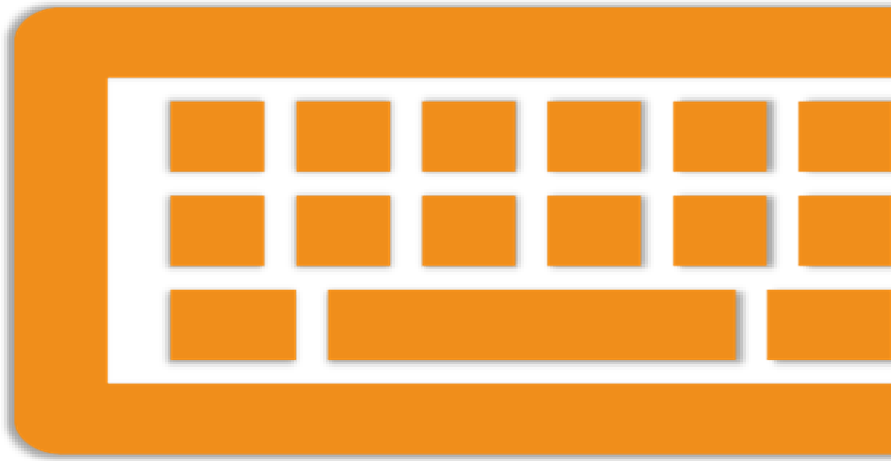
```
[Running] python -u "C:\Users\PC\AppData\Local\Temp\tempCodeRunnerFile.python"
  File "C:\Users\PC\AppData\Local\Temp\tempCodeRunnerFile.python", line 2
    print("world!")
IndentationError: unexpected indent

[Done] exited with code=1 in 0.175 seconds
```

Summary

- The Python programming language is an easy to read-write language
- Python is now gaining more and more popularity (creating jobs demands)
- VSCode is one of the most used IDE’s for Python
- VSCode has built in debugger and console

Lab 01

Lab



Questions