PYTHON

BASIC OF PYTHON PROGRAMMING LANGUAGE

LECTURE – 01 & 02

What is Python?

"Python is an interpreted, **object-oriented**, **high-level Programming Language** with dynamic semantics." It was created by *Guido van Rossum*, and released in 1991 (Current Version of python is: 3).

- What is **object-oriented?**
- What does **high-level** programming language mean?
- Used for: *web development, software development, mathematics, game development, research*

Why Python?

- It's almost **close to HUMAN** language.
- Python is **simple and so easy** to learn.
- Python is **Open Source** which means its available free of cost.
- Python works on different platforms (Windows, Mac, Linux, Raspberry Pi, etc).
- Python is much in demand and ensures **high salary** in tech related JOB.
- Python has **powerful development libraries** include **AI, ML** etc.

```
>>>
>>> print("Hello World")
Hello World
>>>
>>> 5+6
11
>>>
>>> 2*10
20
>>>
>>> 15/6
2.5
>>>
```

Python Job Markets

Python is very high in demand and all the major international companies nowadays.

Today a Python Programmer with 3-5 years of experience is asking for around **$150,000** annual package.

- Google
- Intel
- NASA
- PayPal
- Facebook
- IBM
- Amazon
- Netflix
- Pinterest
- Uber and many more.

Careers in Python

- Game developer
- Web designer
- Python developer
- Full-stack developer
- Machine learning engineer
- Data scientist
- Data analyst
- Data engineer
- DevOps engineer
- Software engineer

Characteristics of Python

- It supports functional and structured programming methods as well as OOP.
- It can be used as a scripting language or can be compiled to bytecode for building large applications.
- It provides very high-level dynamic data types and supports dynamic type checking.
- It supports automatic garbage collection. It can be easily integrated with C, C++, COM, ActiveX, CORBA, and Java.

Our Goal

- Basic of Python
- Creating simple program
- Introducing 2/3 modules/library (*Pandas, NumPy, MatSciPy*)
- Implementing simple *AI/ML* based Application

Python Environment Setup

- Download and install latest version of python (https://www.python.org/downloads/windows/)
- IDE (Integrated Development Environment)
  - **PyCharm** (Community version): https://www.jetbrains.com/pycharm/

Python Environment Setup

- Download & Install Python: https://www.python.org/downloads/windows/
- Double click on the file where it has been downloaded to start the installation.
- Click the Install Now button, it is advised to choose the installation folder with a relatively shorter path, and tick the second check box to update the PATH variable.

Python Environment Setup

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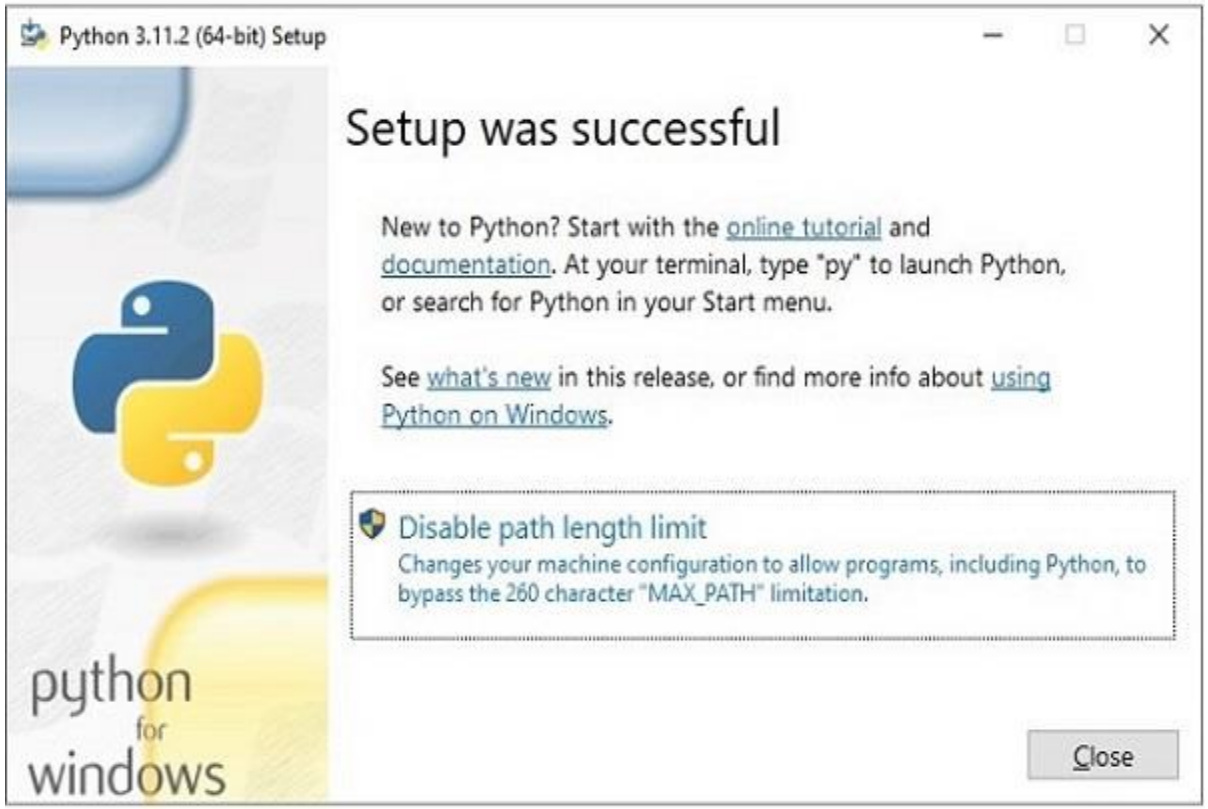
- Double click on the file where it has been downloaded to start the installation.
- Click the Install Now button, it is advised to choose the installation folder with a relatively shorter path, and tick the second check box to update the PATH variable.
- Wait a moment it shows Successful message.

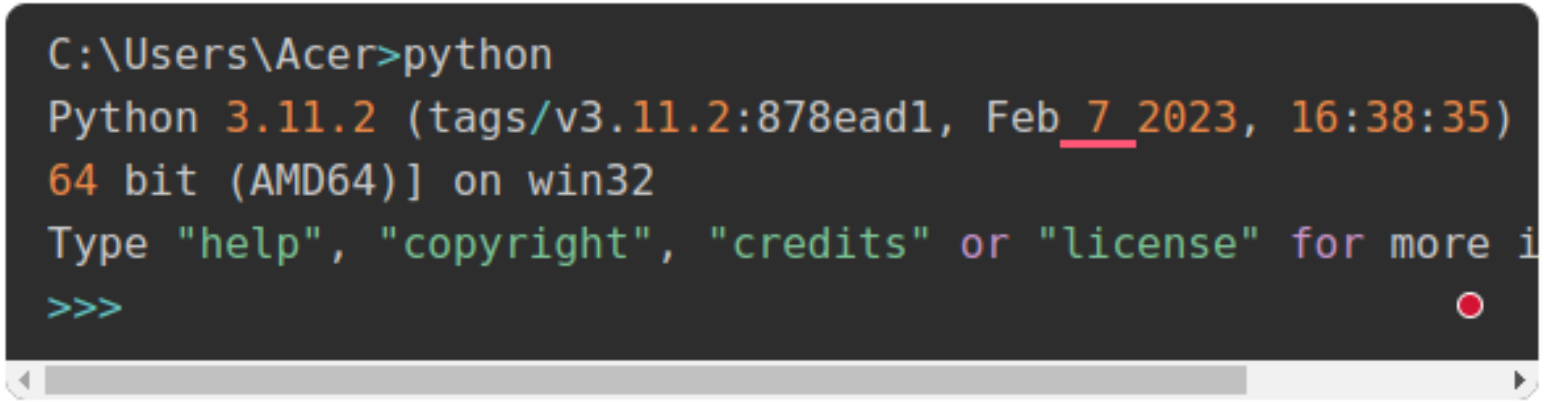


Python Environment Setup

Open the Window Command Prompt terminal and run **Python** to check the success of installation.

Open the **Run menu** with **Windows Key + R**, then type "**cmd**." Press "**Enter**" to open the regular Command Prompt.

or **Ctrl + Shift + Enter** to open as an Administrator.



Python Environment Setup (path setting)

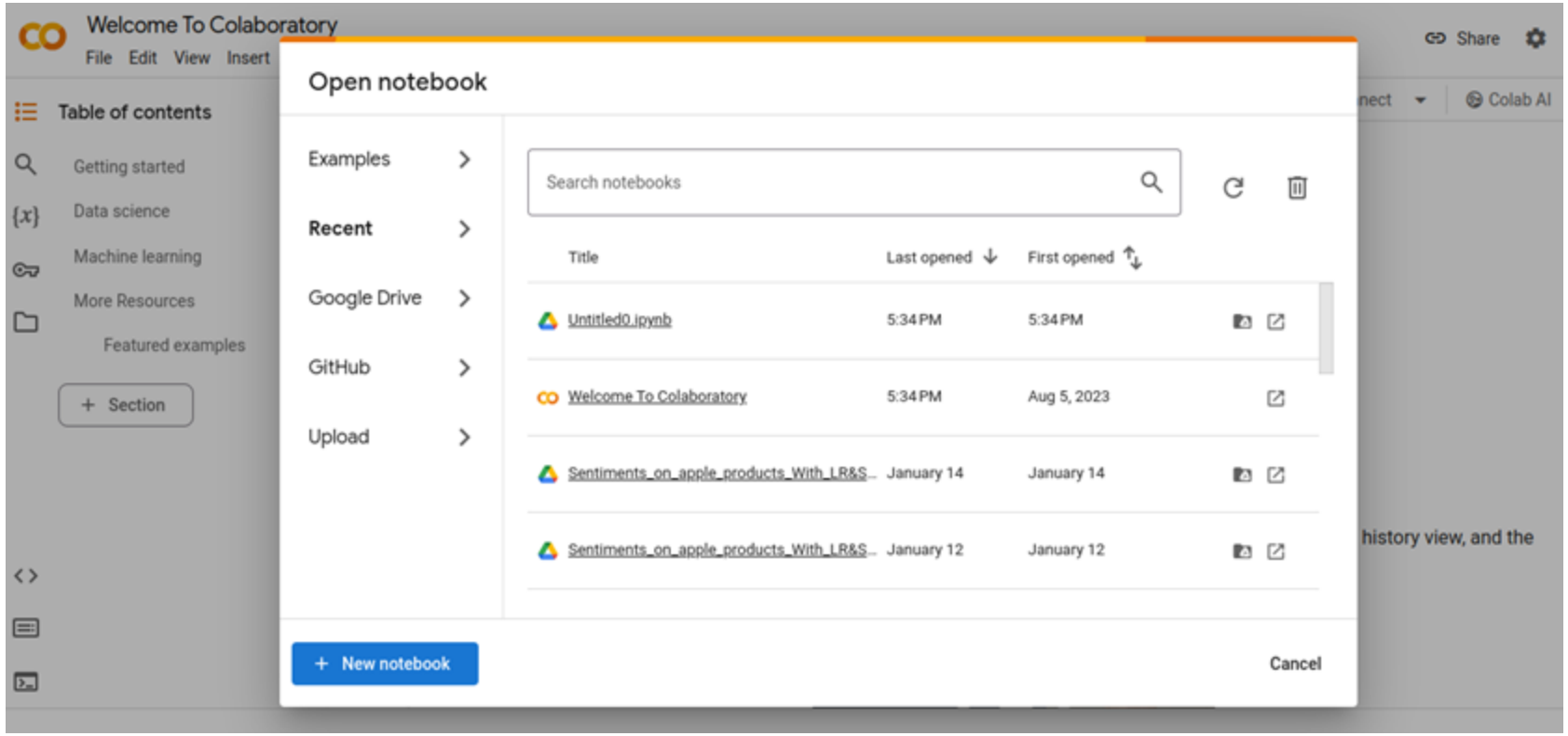
To add the Python directory to the path for a particular session in Windows −

At the command prompt − type path %path%;C:\Python and press Enter.

Note − C:\Python is the path of the Python directory

Python Environment (ONLINE)

- Google Colab: https://colab.research.google.com/



Start with Python

- Open your editor(**PyCharm**) and write your first code.

pythonTest.py

```
1  print("Hello, Your Name! Welcome to python world!!!")
2
```

Run pythonTest

```
/Users/mdsamsuddoha/PycharmProjects/pythonProject/.venv/bin/python /Use
Hello, Your Name! Welcome to python world!!!

Process finished with exit code 0
```

Python Syntax (Identifiers)

A python identifier is a name to identify a variable, function, class, module or other objects.

Naming Conventions for Python Identifiers:

- Identifiers cannot be a **keyword**.
- Identifiers are **case-sensitive**. (*AGE, age, Age are three different identifiers*)
- It can contain alpha-numeric characters and underscores (A-z, 0-9, and _). However, it must begin with a ***letter*** or ***underscore (_)***. The first letter of an identifier cannot be a digit.
- It's a convention to start an identifier with a letter rather _.
- White Spaces are not allowed.
- We cannot use special symbols like !, @, #, $, and so on.

Python Syntax (Reserved Keywords)

and	continue	finally	is	raise
as	def	for	lambda	return
assert	del	from	nonlocal	True
async	elif	global	None	try
await	else	if	not	while
break	except	import	or	with
class	False	in	pass	yield

For Details About Keywords: https://www.digitalocean.com/community/tutorials/python-keywords-identifiers

Python Syntax (Lines & Indentation)

Python programming provides **no braces** to indicate **blocks of code** for class and function definitions or flow control.

Blocks of code are denoted by **line indentation,** which is rigidly enforced.

The **number of spaces** in the indentation is variable, but all statements within the block must be indented the **same amount**. For example –

```
if True:
    print ("True")
else:
    print ("False")
```

Python Syntax (Multi-Line Statements)

- Use of the ***line continuation character (\)***

```
total = item_one + \
        item_two + \
        item_three
```

Python Syntax (Multi-Line Statements)
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- Statements contained within the [], {}, or () brackets do not need to use the ***line continuation character***.

```
days = ['Monday', 'Tuesday', 'Wednesday',
        'Thursday', 'Friday']
```

Python Syntax (Comments in Python)

A comment is a programmer-readable explanation or annotation in the Python source code that ignored by Python interpreter.

Single Line Comment: use **#**

```
# First comment
print ("Hello, World!") # Second comment
```

Python Syntax (Comments in Python)

A comment is a programmer-readable explanation or annotation in the Python source code that ignored by Python interpreter.

Multi Line Comment: use **‘ ‘ ‘ text ’ ’ ’**

```
'''
This is a multiline
comment.
'''
```

THANK YOU