ASSIGNMENT – 1 (DATED: 29TH JANUARY 2023)

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Q1. Who developed python programming language?

- *Guido Van Rossum developed python programming language,first released on 20 February 1991.*

Q2. Which type of programming does python support?

- *Python is a dynamic, high-level and interpreted programming language. It supports object-oriented Programming as well as procedural programming language.*

❖ *Features of python:*

- ✓ *Free and open source*
- ✓ *Easy to code*
- ✓ *Easy to read*
- ✓ *Object oriented language*
- ✓ *GUI programming support*
- ✓ *Easy to debug*
- ✓ *Portable language*
- ✓ *Large standard library*

Q3. Is python case-sensitive when dealing with identifiers?

- *Yes, Python is a case-sensitive programming language.*

❖ *For naming identifiers, Python has a unique set of rules that need to be followed:*

- ✓ *Identifier names in Python can contain numbers (0-9), uppercase letters (A-Z), lowercase letters (a-z), and underscore (_).*
- ✓ *The name should always start with a non-numeric character.*
- ✓ *An identifier name should not contain numeric characters only.*
- ✓ *Identifier names in Python are case-sensitive like most other languages. ('Ash' is different from 'ASH').*
- ✓ *Users can begin identifiers with an underscore; it will not display an error.*

Q4. What is the correct extension of the python file?

- *The correct extension of the python file is .py .*
  A .py file is a program or script written in Python.
  It can and should be edited in a text editor, but should run with a python interpreter.

Q5. Is python code compiled or interpreted?

- *"Python is an interpreted language", is the most common saying, which is also written in various books, but the hidden fact is Python is both compiled as well as an interpreted language. This means when we run a Python code, it is first compiled and then interpreted line by line. The compilation part is mostly hidden from the user. while running the code Python generates a byte code internally, this byte code is then converted using a Python virtual machine to generate the output.*

Q6. Name a few blocks of code used to define in Python language?

- *In Python, each line of a code block must be indented by the same amount of whitespace. Python code becomes well-formatted when indentation is used.*
  Other than this we use braces { } , Definitions , class , list , tuple , set etc.

Q7. State a character used to give single-line comments in Python?

- *We can use the # character to write the comment in python.*
- *A comment does not have to be text that explains the code, it can also be used to prevent Python from executing code*
- ```
  #This is a comment
  print("Hello, World!")
  ```

Q8. Mention functions which can help us to find the version of Python that we are currently working on?

- *The function sys.version can help us to find the version of python that we are currently working on.*

```
import sys
print(sys.version)
```

```
3.10.8 | packaged by conda-forge | (main, Nov 22 2022, 08:26:04) [GCC 10.4.0]
```

Q9. Python supports the creation of anonymous functions at runtime, using a construct called _____.

- *Lambda function*
- *A lambda function is a small anonymous function.*
- *A lambda function can take any number of arguments, but can only have one expression.*
- *Syntax*
- *lambda arguments : expression*
- *Example:*

```
x = lambda a : a + 10
print(x(5))
```

```
15
```

Q10. What does pip stand for Python?

- *Developed in 2008, pip (an acronym of "pip Install Packages") is today the standard tool for installing Python packages and their dependencies in a secure manner. Most recent distributions of Python come with pip preinstalled. Python 2.7. 9 and Python 3.4 and later versions include pip by default.*
  - ✓ *A package contains all the files you need for a module.*
  - ✓ *Modules are Python code libraries you can include in your project.*

Q11. Mention a few built-in functions in Python?

- *A function is a block of code which only runs when it is called.*
- *You can pass data, known as parameters, into a function.*
- *A function can return data as a result.*
- *The built-in Python Functions are as follows:*

✓ *print( ) function*
✓ *type( ) function*
✓ *input( ) function*
✓ *abs( ) function*
✓ *pow( ) function*
✓ *sorted( ) function*
✓ *max( ) function*
```

Q12. What is the maximum possible length of an identifier in Python?

- *An identifier can have a maximum length of 79 characters in Python.*

Q13. What are the benefits of using Python?

- *One of the top benefits of Python is that it is easy to learn and fun to use. Its syntax, unlike most computer languages, reads like English, so it isn't as stressful to learn as other programming languages.*
- *Also, Python programming is a general-purpose skill used in almost all fields, including:*

1. *Data science*
2. *Scientific and mathematical computing*
3. *Web development*
4. *Finance and trading*
5. *System automation and administration*
6. *Computer graphics*
7. *Basic game development*
8. *Security and penetration testing*
9. *General and application-specific scripting*
10. *Mapping and geography (GIS software) etc.*

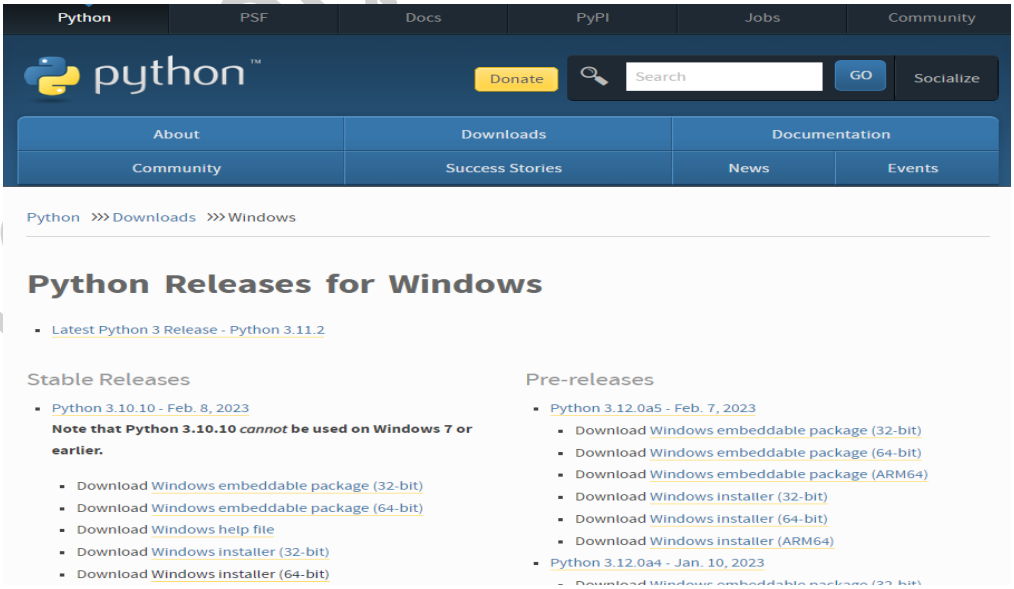
Q14. How is memory managed in Python?

- *Memory in Python is managed by Python private heap space. All Python objects and data structures are located in a private heap. This private heap is taken care of by Python Interpreter itself, and a programmer doesn't have access to this private heap. Python memory manager takes care of the allocation of Python private heap space. Memory for Python private heap space is made available by Python's in-built garbage collector, which recycles and frees up all the unused memory.*

Q15. How to install Python on windows and set path variables?

- *Step 1 — Downloading the Python Installer*

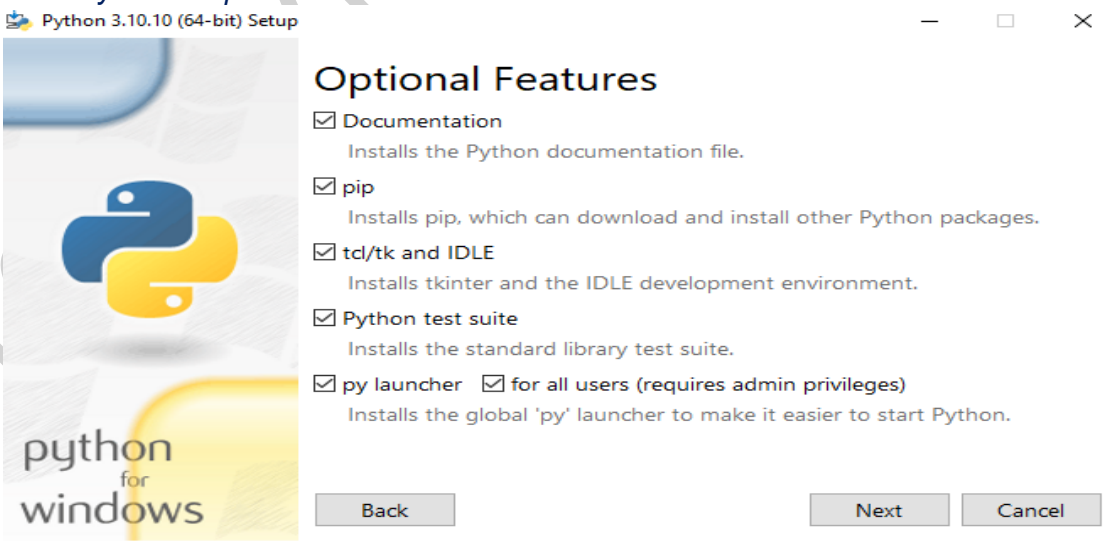
Go to the official Python download page for Windows.
Find a stable Python 3 release. This tutorial was tested with Python version 3.10.10.Click the appropriate link for your system to download the executable file: ***Windows installer (64-bit)*** *or* ***Windows installer (32-bit)****.*



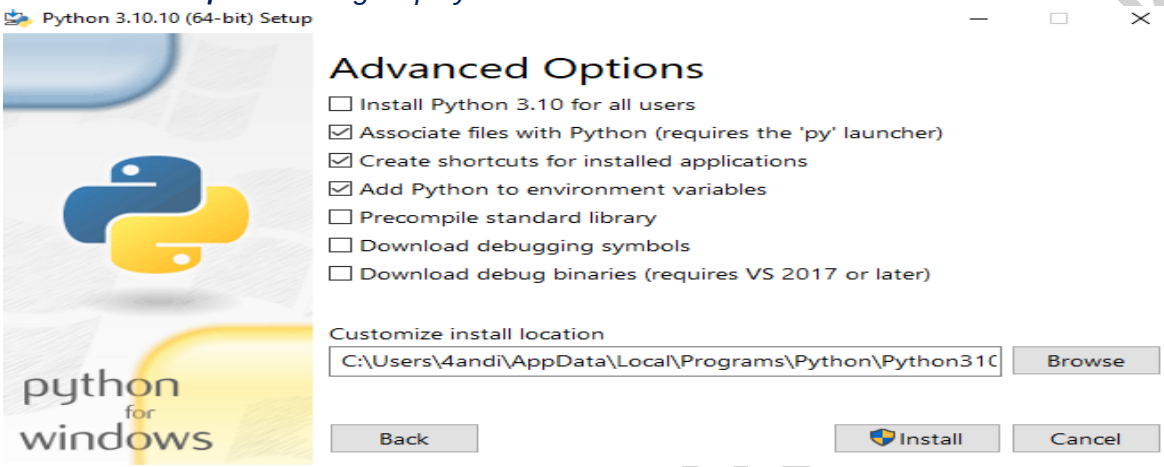
- *Step 2 — Running the Executable Installer*

After the installer is downloaded, double-click the .exe file, for example python-3.10.10-amd64.exe, to run the Python installer.
*Select the **Install launcher for all users** checkbox, which enables all users of the computer to access the Python launcher application.*
*Select the **Add python.exe to PATH** checkbox, which enables users to launch Python from the command line.*

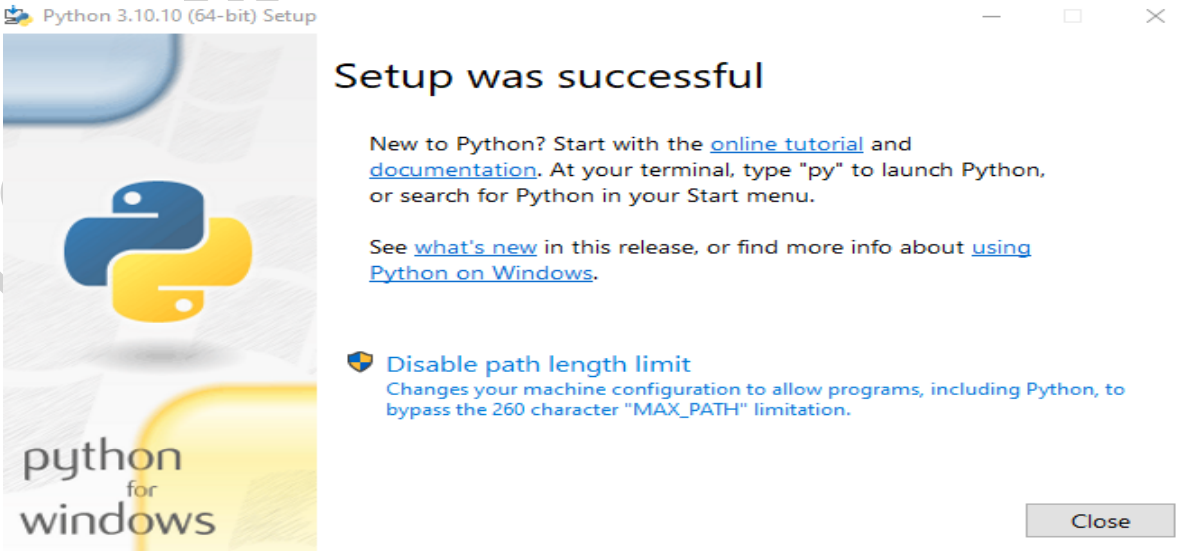
*If you're just getting started with Python and you want to install it with default features as described in the dialog, then click **Install Now** and go to Step 4 - Verify the Python Installation. To install other optional and advanced features, click **Customize installation** and continue.*
*The **Optional Features** include common tools and resources for Python and you can install all of them, even if you don't plan to use them.*



Select some or all of the following options:
***Documentation**: recommended*
***pip**: recommended if you want to install other Python packages, such as NumPy or pandas*
***tcl/tk and IDLE**: recommended if you plan to use IDLE or follow tutorials that use it*
***Python test suite**: recommended for testing and learning*
***py launcher** and **for all users**: recommended to enable users to launch Python from the command line*
*Click **Next**.*
*The **Advanced Options** dialog displays.*



Select the options that suit your requirements:
***Install for all users**: recommended if you're not the only user on this computer*
***Associate files with Python**: recommended, because this option associates all the Python file types with the launcher or editor*
***Create shortcuts for installed applications**: recommended to enable shortcuts for Python applications*
***Add Python to environment variables**: recommended to enable launching Python*
***Precompile standard library**: not required, it might down the installation*
***Download debugging symbols** and **Download debug binaries**: recommended only if you plan to create C or C++ extensions*
Make note of the Python installation directory in case you need to reference it later.
*Click **Install** to start the installation.*
*After the installation is complete, a **Setup was successful** message displays.*



- *Step 3 — Adding Python to the Environment Variables (optional)*

*Skip this step if you selected **Add Python to environment variables** during installation.*
If you want to access Python through the command line but you didn't add Python to your environment variables during installation, then you can still do it manually.
Before you start, locate the Python installation directory on your system. The following directories are examples of the default directory paths:
*C:\Program Files\Python310: if you selected **Install for all users** during installation, then the directory will be system wide*
*C:\Users\Sammy\AppData\Local\Programs\Python\Python310: if you didn't select **Install for all users** during installation, then the directory will be in the Windows user path*
Note that the folder name will be different if you installed a different version, but will still start with Python.
*Go to **Start** and enter advanced system settings in the search bar.*
*Click **View advanced system settings**.*
*In the **System Properties** dialog, click the **Advanced** tab and then click **Environment Variables**.*
Depending on your installation:
*If you selected **Install for all users** during installation, select **Path** from the list of **System Variables** and click **Edit**.*
*If you didn't select **Install for all users** during installation, select **Path** from the list of **User Variables** and click **Edit**.*
*Click **New** and enter the Python directory path, then click **OK** until all the dialogs are closed.*

Q16. Is Indetation required in Python?

- *Indentation refers to the spaces at the beginning of a code line.*
  Where in other programming languages the indentation in code is for readability only, the indentation in Python is very important. Python uses indentation to indicate a block of code.