PART 1 **SK SHABBEER ALI**

What is Python?

Python is a high-level and object-oriented programming language with unified semantics designed primarily for developing apps and the web. It is the core language in the field of Rapid Application Development (RAD) as it offers options such as dynamic binding and dynamic typing.

What are the benefits of Python?

The benefits of Python are as follows:

- **Speed and Productivity:** Utilizing the productivity and speed of Python will enhance the process control capabilities and possesses strong integration.
- **Extensive Support for Libraries:** Python provides a large standard library that includes areas such as operating system interfaces, web service tools, internet protocols, and string protocols. Most of the programming tasks are already been scripted in the standard library which reduces effort and time.
- **User-friendly Data Structures:** Python has an in-built dictionary of data structures that are used to build fast user-friendly data structures.
- **Existence of Third-Party Modules:** The presence of third-party modules in the Python Package Index (PyPI) will make Python capable to interact with other platforms and languages

What are the key features of Python?

The following are the significant features of Python, and they are:

- **Interpreted Language:** Python is an interpreted language that is used to execute the code line by line at a time. This makes debugging easy.
- **Highly Portable:** Python can run on different platforms such as Unix, Macintosh, Linux, Windows, and so on. So, we can say that it is a highly portable language.
- **Extensible:** It ensures that the Python code can be compiled on various other languages such as C, C++, and so on.
- **GUI programming Support:** It implies that Python provides support to develop graphical user interfaces
- **Python is an interpreted language.** That means that, unlike languages like *C* and its variants, Python does not need to be compiled before it is run. Other interpreted languages include *PHP* and *Ruby*.
- **Python** is **dynamically typed**, this means that you don't need to state the types of variables when you declare them or anything like that. You can do things like `x=111` and then `x="I'm a string"` without error

What type of language is Python? Programming or Scripting?

Python is suitable for scripting, but in general, it is considered a general-purpose programming language

What are the applications of Python?

The applications of Python are as follows:

- GUI-based desktop applications
- Image processing applications
- Business and Enterprise applications
- Prototyping
- Web and web framework applications

What is the difference between a list and a tuple in Python?

The difference between a tuple and list is as follows:

List

- Lists are Mutable datatype.
- Lists consume more memory
- The list is better for performing operations, such as insertion and deletion.
- The implication of iterations is Time-consuming

Tuple

- Tuples are Immutable datatype.
- Tuple consumes less memory as compared to the list
- A Tuple data type is appropriate for accessing the elements
- The implication of iterations is comparatively Faster

What are the global and local variables in Python?

Global Variables in Python: The variables that are declared outside the function are called global variables. These variables can be accessed or invoked by any function in the program.

Local Variables in Python: The variables that are declared inside a function are called local variables. These types of variables can be accessed only inside the function.

Define PYTHON PATH?

PYTHONPATH is an environmental variable that is used when we import a module. Suppose at any time we import a module, PYTHONPATH is used to check the presence of the modules that are imported in different directories

What do you understand by the term PEP 8? Why it is important?

PEP stands for Python Enhancement Proposal**.** A PEP is an official design document providing information to the Python community, or describing a new feature for Python . PEP 8 is especially important since it documents the style guidelines for Python Code.

What are drawbacks of Python ?

Python is Slow at Runtime: Python is not closer to hardware because it is a high-level programming language, unlike C or C++. Python code execution takes place with the help of an interpreter instead of the compiler. The interpreter executes the code line by line, which causes it to slow down.

Python is Not Great for Mobile Application Development
Python programmers feel difficulty in using other languages
Python has High Memory Consumption

What is an Interpreted language?

An Interpreted language executes its statements line by line. Languages such as Python, Javascript, R, PHP, and Ruby are prime examples of Interpreted languages. Programs written in an interpreted language runs directly from the source code, with no intermediary compilation step

What is Scope in Python?

Every object in Python functions within a scope. A scope is a block of code where an object in Python remains relevant.

- A **local scope** refers to the local objects available in the current function.
- A **global scope** refers to the objects available throughout the code execution since their inception.
- A **module-level scope** refers to the global objects of the current module accessible in the program.
- An **outermost scope** refers to all the built-in names callable in the program. The objects in this scope are searched last to find the name referenced
- **Note:** Local scope objects can be synced with global scope objects using keywords such as **global**

What is pass in Python?

- The pass keyword represents a null operation in Python. It is generally used for the purpose of filling up empty blocks of code which may execute during runtime but has yet to be written. Without the **pass** statement in the following code, we may run into some errors during code execution.

```
def myEmptyFunc():
  # do nothing
  pass
myEmptyFunc()    # nothing happens
## Without the pass keyword
# File "<stdin>", line 3
# Indentation Error: expected an indented block
```

What are global, protected and private attributes in Python?

- **Global** variables are public variables that are defined in the global scope. To use the variable in the global scope inside a function, we use the global keyword.
- **Protected** attributes are attributes defined with an underscore prefixed to their identifier eg. _sara. They can still be accessed and modified from outside the class they are defined in but a responsible developer should refrain from doing so.
- **Private** attributes are attributes with double underscore prefixed to their identifier eg. _ansh They cannot be accessed or modified from the outside directly and will result in Attribute Error if such an attempt is made.

What is the use of self in Python?

Self is used to represent the instance of the class. With this keyword, you can access the attributes and methods of the class in python.

BREAK && CONTINUE

Break	**The break statement terminates the loop immediately and the control flows to the statement after the body of the loop.**
Continue	**The continue statement terminates the current iteration of the statement, skips the rest of the code in the current iteration and the control flows to the next iteration of the loop.**

What is __ in it __?

__ **Init** __ is a contructor method in Python and is automatically called to allocate memory when a new object/instance is created. All classes have a __ **init** __ method associated with them.

C	Python
An Imperative programming model is basically followed by C.	An object-oriented programming model is basically followed by Python.
Variables are declared in C.	Python has no declaration.
C doesn't have native OOP.	Python has OOP which is a part of the language.
Pointers are available in C language.	No pointers functionality is available in Python.
C is a compiled language.	Python is an interpreted language.
There is a limited number of built-in functions available in C.	There is a large library of built-in functions in Python.

Parameters	Python	C++
Code	Python has fewer lines of code	C++ tends to have long lines of code
Compilation	Python is interpreted	C++ is precompiled
Speed	It is slower since it uses an interpreter and also determines the data type at run time	It is faster once compiled compared to python

Parameters	Python	C++
Nature	It is dynamically typed.	It is statically typed
Functions	Python Functions do not have restrictions on the type of the argument and the type of its return value	In C++, the function can accept and return the type of value which is already defined
Scope of Variable	Variables are accessible even outside the loop	The scope of variables is limited within the loops