### What are local variables and global variables in Python?

**A**: [In Python, global variables are those which are not defined inside any function and have a global scope whereas local variables are those which are defined inside a function and their scope is limited to that function only](https://www.geeksforgeeks.org/global-local-variables-python/" \t "https://www.bing.com/_blank). [In other words, we can say that local variables are accessible only inside the function in which it was initialized whereas the global variables are accessible throughout the program and inside every function](https://www.geeksforgeeks.org/global-local-variables-python/" \t "https://www.bing.com/_blank)

1. **When to use a tuple vs list vs dictionary in Python?**

**A:** The list and tuple can be created by using the elements without any defining the key whereas the dictionary uses the key and value pairs.

* If we want to create a group of elements with some key name, then we can go for dictionary as it accepts key and value.
* When we want to list out few elements and want to make changes later as per our requirement we can go for list.
* When we want to combine few elements into group and don’t want to apply any changes further then we can go for tuple

1. **Explain some benefits of Python**

* Presence of third-party modules
* Extensive support libraries(NumPy for numerical calculations, Pandas for data analytics, etc.)
* Open source and large active community base
* Versatile, Easy to read, learn and write
* User-friendly data structures
* High-level language
* Dynamically typed language(No need to mention data type based on the value assigned, it takes data type)
* Object-Oriented and Procedural Programming language
* Portable and Interactive
* Ideal for prototypes – provide more functionality with less coding
* Highly EfficientInternet of Things(IoT) Opportunities
* Interpreted Language
* Portable across Operating systems

1. **What is Lambda Functions in Python?**

**A:** 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

**Eq:** x = lambda a : a + 10

print(x(5))

1. **How do I modify a string in python?**

**A:** Through some ways to modify the string in python such as like replace(), split(), join(),upper(),lower(),strip()

1. **What is a Negative Index in Python?**

**A:** Negative indexing is a feature in Python that allows you to access elements in a sequence from the end of the sequence. In Python, negative indexing denotes that the indexing process begins at the end of the iterable. The final element is located at index -1, the next-to-last at index -2, and so on.

1. **What is a dynamically typed language?**

**A:** A dynamically typed language is a programming language that does not require the programmer to specify the data type of a variable before using it. Instead, the data type is inferred at runtime based on the value assigned to the variable. Python is an example of a dynamically typed language

1. **What is an Interpreted language?**

**A:** An interpreted language is a programming language that is executed line by line, rather than being compiled into machine code. Interpreted languages are usually designed to be easy to read and write, which makes them a popular choice for scripting, rapid prototyping, and small to medium-sized applications. Some examples of interpreted languages are Python, Ruby, Java, PHP, JavaScript, Perl.

1. **What is Scope in Python?**

**A:** In Python, scope refers to the region of a program where a particular variable is accessible. There are four types of scopes in Python: local, enclosing, global, and built-in.

- Local scope: A variable created inside a function belongs to the local scope of that function and can only be used inside that function.

- Enclosing scope: A variable defined in the enclosing function of a nested function can be accessed by the nested function.

- Global scope: A variable created outside of a function belongs to the global scope and can be accessed from anywhere in the code.

- Built-in scope: The built-in scope contains names such as `print`, `len`, `str`, etc. These names are automatically available in any Python program.

1. **What are lists and tuples? What is the key difference between the two?**

**A:** Lists and tuples are two of the most commonly used data structures in Python. Both are used to store a collection of items, but there are some key differences between them.

* Lists are mutable, which means that you can add, remove, or modify elements after the list has been created. Lists are denoted by square brackets [].
* Tuples are immutable, which means that once a tuple has been created, you cannot add, remove, or modify elements. Tuples are denoted by parentheses ().
* Here are some other differences between lists and tuples:
* Lists are better for performing operations such as insertion and deletion because they are mutable.
* Tuples consume less memory than lists because they are immutable.
* Lists have several built-in methods, while tuples have fewer built-in methods.

1. **What are the common built-in data types in Python?**

**A:**Python has several built-in data types. Here are some of the most common ones:

- Numeric Types: `int`, `float`, and `complex`.

- Sequence Types: `list`, `tuple`, and `range`.

- Text Type: `str`.

- Mapping Type: `dict`.

- Set Types: `set` and `frozenset`.

- Boolean Type: `bool`.

- Binary Types: `bytes`, `bytearray`, and `memoryview`.

1. **What is pass in Python?**

**A:**  In Python, pass is a null statement that is used when a statement is required syntactically but you do not want any command or code to execute. It is like a null operation, as nothing will happen if it is executed. pass statements can also be used for writing empty loops pass is also used for empty control statements, functions, and classes.

1. **What are modules and packages in Python?**

**A:** In Python, a module is a file containing Python definitions and statements. A package is a way of organizing related modules into a single directory hierarchy. Packages are simply directories that contain a special file called `\_\_init\_\_.py`. The `\_\_init\_\_.py` file can be empty or can contain valid Python code. When the Python interpreter executes the `import` statement, it searches for the module in a list of directories that make up the Python search path. The search path is a list of directories that the interpreter searches in order to find the module or package that you want to import. You can use modules and packages to organize your code into logical groups and to make it easier to reuse code in other programs.

1. **What are global, protected and private attributes in Python?**

**A:** xPython does not have built-in access modifiers like "public", "protected", and "private" attributes. However, by convention, one uses attribute names without a leading underscore for "public" attributes and attribute names with a single leading underscore for "protected" attributes. Attribute names with two leading underscores are used for "private" attributes. In Python, global variables are those that are defined outside of any function or class. They can be accessed from anywhere in the program.

1. **What is the use of self in Python?**

**A:** In Python, `self` is a reference to the current instance of the class, and is used to access variables that belong to the class. It does not have to be named `self`, you can call it whatever you like, but it has to be the first parameter of any function in the class. By using `self`, you can access the attributes and methods of the class in Python. It binds the attributes with the given arguments. The reason you need to use `self` is because Python does not use the `@` syntax to refer to instance attributes.

1. **What is \_\_init\_\_?**

**A:**In Python, \_\_init\_\_ is a special method known as the constructor. It is automatically called when a new instance (object) of a class is created. The \_\_init\_\_ method allows you to initialize the attributes (variables) of an object. When you create a new object of a class, Python automatically calls the \_\_init\_\_ method to initialize the object’s attributes. Unlike regular methods, the \_\_init\_\_ method has two underscores (\_\_) on each side. Therefore, the \_\_init\_\_ is often called dunder init. The name comes abbreviation of the double underscores init.

1. **What is break, continue and pass in Python?**

**A:** In Python, break, continue, and pass are loop control statements. They are used to change the normal flow of a loop. Here is a brief description of each:

break: The break statement is used to exit a loop prematurely. When the break statement is executed, the loop is terminated immediately, and the program continues with the next statement after the loop.

continue: The continue statement is used to skip the current iteration of a loop and move on to the next iteration.

pass: The pass statement is used as a placeholder when you need to write code that does nothing. It is often used when you are writing a new function or class and you want to define it without writing any code yet.

### **What are unit tests in Python?**

**A:** Unit testing is a technique in which particular module is tested to check by developer himself whether there are any errors. The primary focus of unit testing is test an individual unit of system to analyze, detect, and fix the errors.

Python provides the unittest module to test the unit of source code. The unittest plays an essential role when we are writing the huge code, and it provides the facility to check whether the output is correct or not.

Normally, we print the value and match it with the reference output or check the output manually.

This process takes lots of time. To overcome this problem, Python introduces the unittest module. We can also check the application's performance by using it.

1. **What is docstring in Python?**

**A:** In Python, a docstring is a string literal that appears right after the definition of a function, method, class, or module. It is used to document the code and provide information about the code’s purpose, arguments, and return values. Docstrings are accessible from the \_\_doc\_\_ attribute for any of the Python objects and also with the built-in help() function.

1. **What is slicing in Python?**

**A:** In Python, slicing is a technique to extract a portion of a sequence, such as a string, list, or tuple. Slicing is done by using the colon (:) operator. The syntax for slicing is sequence[start:stop:step]. Here, start is the index of the first element to include in the slice, stop is the index of the first element to exclude from the slice, and step is the number of elements to skip between each element in the slice.