Assignment 2

1) What is PYTHONPATH ?

PYTHONPATH is an environment variable which the user can set to add additional directories that the user wants Python to add to the sys.path directory list. In short, we can say that it is an environment variable that you set before running the Python interpreter. Mostly you should not set these variables as they are not needed for Python to execute normal programs because it knows where its standard library is to be found. PYTHONPATH is used to help in importing the modules. So, when you import modules in your Python scripts, PYTHONPATH is also checked to see which directories might contain the imported module.

2) What are python modules? Name some commonly used built-in module in Python?

Python modules are files containing Python code. This code can either be functions classes or variables. A Python module is a .py file containing executable code.

Some of the commonly used built-in modules are:

- datatime
- JSON

3) What are local variable and global variable in Python?

There are two types of variables: global variables and local variables.

The scope of global variables is the entire program whereas the scope of local variable is limited to the function where it is defined.

```
def func():
x = "Python"
print(x)
print(s)
s = "Tutorialspoint"
print(s)
func()
print(x)
```

In above program- x is a local variable whereas s is a global variable, we can access the local variable only within the function it is defined (func() above) and trying to

call local variable outside its scope(func()) will through an Error. However, we can call global variable anywhere in the program including functions (func()) defined in the program.

Local variables:

Local variables can only be reached within their scope(like func() above).

Like in below program- there are two local variables – x and y.

```
def sum(x,y):
sum = x + y
return sum
print(sum(5, 10))
```

Output

15

The variables x and y will only work/used inside the function sum() and they don't exist outside of the function. So trying to use local variable outside their scope, might through NameError. So obviously below line will not work.

```
print(x)
```

Global variables

A global variable can be used anywhere in the program as its scope is the entire program.

Let's understand global variable with a very simple example -

```
z = 25
def func():
global z
print(z)
z=20
func()
print(z)
```

Output

25

A calling func(), the global variable value is changed for the entire program.

Below example shows a combination of local and global variables and function parameters -

```
def func(x, y):
global a
a = 45
x,y = y,x
b = 33
b = 17
c = 100
print(a,b,x,y)
a,b,x,y = 3,15,3,4
func(9,81)
print (a,b,x,y)
```

Output

45 17 81 9

45 15 3 4

4) Is python case sensitive?

Python *is* a case-sensitive programming language. For example, if a variable is named '*HelloWorld*', then an error will occur if the variable is called '*helloworld*'. Variables, functions, and objects in Python must be called exactly how they are named, including the case.

Like most other programming languages like Java, C, and C++, Python is also case-sensitive. We'll discuss in detail why Python is case-sensitive.

Moreover, I will go through some examples as well to make them simple to understand. Unlike Python, some other languages such as FORTRAN, SQL, and Pascal are not case-sensitive.

5) What is type conversion in python?

Python defines type conversion functions to directly convert one data type to another which is useful in day-to-day and competitive programming. This article is aimed at providing information about certain conversion functions.

There are two types of Type Conversion in Python:

1. Implicit Type Conversion
2. Explicit Type Conversion

Implicit Type Conversion:

In Implicit type conversion of data types in Python, the Python interpreter automatically converts one data type to another without any user involvement

Explicit Type Conversion:

In Explicit Type Conversion in Python, the data type is manually changed by the user as per their requirement. Various forms of explicit type conversion are explained below:

1.int(a, base): This function converts any data type to integer. 'Base' specifies the base in which string is if the data type is a string.
2. float(): This function is used to convert any data type to a floating-point number
3. ord() : This function is used to convert a character to integer.
4. hex() : This function is to convert integer to hexadecimal string.
5. oct() : This function is to convert integer to octal string.
6. tuple() : This function is used to convert to a tuple.
7. set() : This function returns the type after converting to set.
8. list() : This function is used to convert any data type to a list type.
9. dict() : This function is used to convert a tuple of order (key,value) into a dictionary.
10. str() : Used to convert integer into a string.
11. complex(real,imag) : This function converts real numbers to complex(real,imag) number.
12. chr(number): This function converts number to its corresponding ASCII character.

6) Is indentation required in python?

Yes, python is very sensible about indentation, if code is not properly indented it won't be executed, as python doesn't have brackets to separate code segments then it is necessary to indent pretty well

7) What is the difference between Python Arrays and Lists?

List: A list in Python is a collection of items which can contain elements of multiple data types, which may be either numeric, character logical values, etc. It is an ordered collection supporting negative indexing. A list can be created using [] containing data values.

Contents of lists can be easily merged and copied using python's inbuilt functions

The first element is an integer, the second a string and the third is an list of characters.

Array: An array is a vector containing homogeneous elements i.e. belonging to the same data type. Elements are allocated with contiguous memory locations allowing easy modification, that is, addition, deletion, accessing of elements. In Python, we have to use the array module to declare arrays. If the elements of an array belong to different data types, an exception "Incompatible data types" is thrown.