**Python Data Types-Assignment(5-07-25):**

1. **What is a data type in Python?**

Data types represent different types of values stored in variables. They help in organizing data efficiently and allow Python to interpret operations correctly.

1. **List all the data types that we have in Python?**
2. Numeric datatype:integer, float, complex
3. Sequence datatype: string, tuple ,list, range
4. Boolean datatype
5. Dictionary datatype
6. Set , frozenset datatype
7. None datatype.
8. **What is the difference between mutable and immutable data types?**

Mutable datatype: we can change or modified the values after it is defined without creating another object

Immutable datatype :we cannot change the value once it is defined if we want to change then we have create another object or reassign the values

1. **What is the difference between int, float, and complex?**

Int,float,complex are numeric data types where;

Int:values of integer without any decimals

Float:refers to the integer values with decimals

Complex:it has two parts real and imaginary part

Eg:a+bi

1. **Which data type is used to represent text in Python?**

The str **(string)** data type is used to represent text in Python. It is enclosed in single (' ') or double quotes (" ").

1. **What is the output of type(521) and type("521")?**

* type(521) → integer
* type("521") → string

1. **What is the difference between list, tuple, and set?**

* **List**: Ordered, indexed, allows duplicates, mutable.  
  Syntax: [1, 2, "text", 3.4]
* **Tuple**: Ordered, indexed, allows duplicates, **immutable**.  
  Syntax: (1, 2, 3)
* **Set**: Unordered, finite ,unique,does **not allow duplicates**, mutable.We cannot perform indexing   
  Syntax: {1, 2, 3}

1. **How is a dictionary different from a list?**

Dictionary contains key values pairs .key should not repeat but value can repeat.we can access value by using key but we cannot access key by using value where as list is individual and it is collection of different types.

**9.What is the default data type of a number with a decimal point?**

The default data type is float.

**10.Declare variables of type int, float, string, and complex.**

A=10

B=4.8

C=”hello”

D=6+7j

1. **Take any 3 datatypes examples and check type of each variable using the type() function**

print(type('hello')) >>output:str

print(type(4.1)) >>output:float

print(type(6)) >>output:int

1. **What happens if you try to add a string and an integer?**

If we add a string and integer it will throw a type error because of the different datatypes.

For eg:

Str1=123

Str2=hi

Print(str1+str2)

>>Output: unsupported operand type(s) for +: 'int' and 'str'

**13.What is the output of:**

* 1. **x = [1, 2, 3]**
  2. **y = (1, 2, 3)**
  3. **z = {1, 2, 3}**
  4. **print(type(x), type(y), type(z))**

Output:

<class 'list'>

<class 'tuple'>

<class 'set'>

**14.Can you change a value in a tuple once it is defined? Why or why not?**

We cannot change a value in a tuple once it is defined because tuple is immutable.we can re-assign but cannot change the value.

1. **Is reassignment possible for immutable datatypes?**

Yes, re-assignment is possible for immutable data types because we are not changing the value we are changing the reference. reassignment means we are not changing the existing value , it create a new object then the variable take the changed value after reassigning.