Variables , Input and Output (Day-1)

1. Which of the following identifier names are invalid and why?

   A. Serial_no. - Contains an underscore character, which is allowed.
   B. 1st_Room - Identifiers Cannot start with a digit.
   C. Hundred$ - Identifiers Cannot contain special characters other than underscore(_).
   D. Total_marks - Contains an underscore character, which is allowed.
   E. total-Marks - Identifier cannot contain hyphens(-).
   F. Total Marks - Identifier cannot contain space.
   G. True - Identifier cannot contain reserved keywords.
   H. _Percentag - Starts with an Underscore character, which is allowed.

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2. Write the corresponding python assignment statements.

a) Assign 10 to variable length and 20 to variable breadth.

```
length=10
breadth=20
```

b) Assign the average of values of variables length and breadth to a variable sum.

```
sum = (length + breadth) /2
```

c) Assign a list containing strings 'Paper', 'Gel Pen', and 'Eraser' to a variable stationery.

```
Stationery=['Paper','Gelpen','Eraser']
```

d) Assign the strings 'Mohandas', 'Karamchand', and 'Gandhi' to variables first, middle and last.

```
first = 'Mohandas'
middle = 'Karamchand'
last = 'Gandhi'
```

e) Assign the concatenated value of string variables first, middle, and last to variable fullname.

```
first = 'Mohandas'
middle = 'Karamchand'
last = 'Gandhi'
fullname = (first +' '+ middle +' ' +last)
print(fullname)
```

3. What is the difference between static and dynamic variables ?

Static variable:

- Static variables are declared inside a function but outside any nested function.
- They are initialized when the function is defined and retain their value throughout the lifetime of the program.
- They are shared among all calls to function.

Dynamic variable:

- Dynamic variables are declared inside a function but within a nested function.
- They are initialized when the nested function is called and are destroyed when the nested function exits.
- They are not shared among different calls to the nested function.

Example:

```
def outer_function():
    static_variable=10 #static variable
    def inner_function():
        dynamic_variable=10 #dynamic variable

        inner_function()
    outer_function()
```

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4. What are the three main types of number data types in python?

- Int (integer)
- Float (float-point number)
- Complex (complex number)

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5. Give examples of each of the numeric data types as mentioned.

Int: 10,20,0
Float: 3.14,-9.8, 1.23e5
Complex: 1+2j, 3-4j, 0+1j

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6. How is the boolean data type related to the integer data type in Python?

The Boolean data type is a subtype of the integer data type. Boolean True is equivalent to the integer value 1, Boolean False is equivalent to the integer value 0.

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7. What is the special significance of the boolean values True and False?

Boolean Values are used in conditional statements and other logical operations. True represents a true condition or a non zero value, while false represents a false condition or a zero value.

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8. What do you mean by frozenset?Explain it with suitable example.

- A frozenset is an immutable set.
- Once created, its element cannot be added,removed, or modified.
- Frozen sets are useful when you want to create a set that will not change over time.

  Example:
  ```
  My_frozenset = frozenset([1,2,3,4,5])
  #Attempt to add an element to the frozenset
  My_frozenset.add(6)
  #Raises an Attribute Error
  ```
