**Q1**. Create one variable containing following type of data:

(i) string

(ii) list

(iii) float

(iv) tuple

**Ans**-

Creating a variable containing different data types

Mixed variable = ("Hello", [1, 2, 3], 3.14, (5, 6))

In the above variable:

* "Hello" is a string.
* [1, 2, 3] is a list.
* 3.14 is a float.
* (5, 6) is a tuple.

**Q2.** Given are some following variables containing data:

(i) var1 = ‘ ‘

(ii) var2 = ‘[ DS , ML , Python]’

(iii) var3 = [ ‘DS’ , ’ML’ , ‘Python’ ]

(iv) var4 = 1.

**Ans-**

var1 = ' '

# var1 is a string

var2 = '[ DS , ML , Python]'

# var2 is a string (because of the quotes)

var3 = ['DS', 'ML', 'Python']

# var3 is a list

var4 = 1.

# var4 is a float (note the period)

**Q3**. Explain the use of the following operators using an example:

(i) /

(ii) %

(iii) //

(iv) \*\*

**Ans-**

**Division (/)**: result = 10 / 3

Region- result is 3.3333 (float division)

**Modulus (%)**: remainder = 10 % 3

Region- remainder is 1 (10 divided by 3 leaves a remainder of 1)

**Floor Division (//)**: quotient = 10 // 3

Region- quotient is 3 (integer division)

**Exponentiation (\*\*)**: power = 2 \*\* 3

Region- power is 8 (2 raised to the power of 3)

**Q4**. Create a list of length 10 of your choice containing multiple types of data. Using for loop print the

element and its data type.

**Ans-**

l= [1, "Hello", 3.14, True, [1, 2], (3, 4), {5, 6}, {"key": "value"}, None, complex(2, 3)]

for i in l:

print(type(i))

<class 'int'>

<class 'str'>

<class 'float'>

<class 'bool'>

<class 'list'>

<class 'tuple'>

<class 'set'>

<class 'dict'>

<class 'NoneType'>

<class 'complex'>

**Q5.** Using a while loop, verify if the number A is purely divisible by number B and if so then how many times it can be divisible.

**Ans-**

A = 100

B = 5

count = 0

while A % B == 0:

A //= B

count += 1

print(f"Number is divisible {count} times.")

Number is divisible 2 times.

**Q6**. Create a list containing 25 int type data. Using for loop and if-else condition print if the element is divisible by 3 or not.

**Ans-**

numbers = list(range(1, 26))

for num in numbers:

if num % 3 == 0:

print(f"{num} is divisible by 3")

else:

print(f"{num} is not divisible by 3")

**Q7**. What do you understand about mutable and immutable data types? Give examples for both showing this property.

**Ans-**

**Mutable Data Types**: These are data types whose values can be changed after they are created. Example: lists.

my\_list = [1, 2, 3]

my\_list[0] = 100

# Changing the first element

**Immutable Data Types**: These are data types whose values cannot be changed after they are created. Example: tuples.

my\_tuple = (1, 2, 3)

# my\_tuple[0] = 100

# This will raise an error