1. In the below elements which of them are values or an expression? eg:- values can be integer or string and expressions will be mathematical operators.

\* - Expression

'hello' - Value

-87.8 - Value

- - Expression

/ - Expression

+ - Expression

6 - Value

2. What is the difference between string and variable?

String is a data type which can hold a set of characters & it is defined by enclosing these characters between a pair of parentheses (“ “ or ‘ ‘). For example, “iNeuron”, “Data science”, ‘artificial intelligence’, ‘Web 3.0’ are all strings.

In comparison, a variable is a placeholder for the memory location of a certain data type which can be used to assign values & perform different types of operations on those values. For example,

a = 56 (data type of variable “a” is integer)

b = “machine learning” (data type of variable “b” is string)

c = 3.14 (data type of variable “c” is float)

d = [[1, 2, 3, 4], [5, 6, 7, 8], 29.03, 'syed', 19.92] (data type of variable “d” is list)

3. Describe three different data types.

1. Integer: This data type can hold whole number values. For example, a = 52
2. Float: This data type can hold decimal number values. For example, b = 22.4
3. String: This data type can hold values in the form of a series of characters enclosed within a pair of parentheses. For example, c = “deep learning”

4. What is an expression made up of? What do all expressions do?

An expression is made up of mathematical operators which can be used to perform specific operations on the variables.

**Types of expressions**

There are various types of expressions in Python. To show what each type of expression does, let us take the initial value of a = 10

* + performs addition operation: a + 1 = 11
* - performs subtraction operation: a - 2 = 8
* \* performs multiplication operation: a \* 3 = 30
* / performs division operation: a / 2 = 5
* % performs remainder operation: a % 3 = 1

5. This assignment statements, like spam = 10. What is the difference between an expression and a statement?

Considering spam = 10, the difference between an expression & a statement is as follows:

spam = 10 is a statement which assigns a value of 10 to the memory location represented by the variable “spam”, whereas an expression can be used to perform specific operations on the value of variable “spam”. For example, spam + 5 = 15, spam - 7 = 3

6. After running the following code, what does the variable bacon contain?

bacon = 22

bacon + 1

After performing the operation, the value of bacon is 23

7. What should the values of the following two terms be?

'spam' + 'spamspam'

'spamspamspam'

'spam' \* 3

'spamspamspam'

8. Why is eggs a valid variable name while 100 is invalid?

eggs is a valid variable name since it is not used as a keyword in the Python programming language whereas 100 is an invalid variable name since we cannot use any integer as a variable name.

9. What three functions can be used to get the integer, floating-point number, or string version of a value?

Suppose a = 100

We can get the integer, floating point number & string version of a by the following functions:

* int(a)

100

* str(a)

'100'

* float(a)

100.0

10. Why does this expression cause an error? How can you fix it?

'I have eaten ' + 99 + ' burritos.'

The above code gives an error because we cannot combine different data types using the + operator. In the above expression, 'I have eaten ' & ' burritos.' are string values whereas 99 is an integer data type.

The above code can be corrected by typecasting the value of 99 to string data type using str() function. The following is the correct code:

'I have eaten ' + str(99) + ' burritos.'