

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.

* An expression

'hello' A value

-87.8 A value

- An expression

/ An expression

- An expression

6 A value

2. What is the difference between string and variable?

Variable: variable is container that holds a value in it. The value it holds can be changed. A variable requires memory to hold the data. The sole purpose of a variable is to store a data and label it by any name, so that it can be used throughout the program.

String: string is a datatype. It is a sequence of Unicode characters wrapped inside single double and triple quote. A string can be hold by using a variable

Example: A_String (variable) = "a_string" (a value as string)

3. Describe three different data types.

Numeric Type: numeric datatypes are integers, floats and complex numbers

Integers : belongs to int class, ranges between negative infinity to positive infinity.

Float : have decimal values in it, ranges between negative infinity to positive infinity

Complex numbers : have imaginary part in it. Represented as **(real part) + (imaginary part) j**.

Boolean Type: Boolean True and Boolean False

Sequence Type: like lists, strings and tuples

List : just like an array but able to hold different datatypes, very flexible

Strings : sequence of characters.

Tuple : just like list, able to hold python objects, but not flexible as list

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

Expressions are used to do the job of Arithmetic and Logical operation.

Constant expression: constant expression consists of only constant values. i.e: 5+2

Integral expression: produce integer result after implementing all the automatic and explicit type conversions . i.e: x+ int(5.0)

Floating expression: produce floating type result, x+ y, 10.57 where x and y are float values.

Relational expression : produce Boolean result, eg: x>=y

Logical expressions : produce Boolean type result, eg: x==10 || y==5

Pointer expressions : produce address values, eg, &x, ptr, ptr++

Bitwise : used to shift the bits, eg: x<< 3(shift left) y>>1(shift right)

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

An expression is a combination of values and functions that are combined and interpreted by compiler to create a new value.

A statement is just a standalone unit of execution and doesn't return anything

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

```
bacon = 22
```

```
bacon + 1
```

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?

Because 100 belongs to numeric datatype, a datatype can not be used as variable

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

For integer : int()

For float : float()

For string ; str()

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

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

We can't add string with a numeric value

Addition expression works differently with string class object and int class object

In string class it is used to concatenate to strings, in int class it does simple addition

If we typecast the numeric value to string then it should work

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