

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?

Variables are empty memory locations created in a program to store data of various data types for future references whereas a String is a type of datatype which can be stored in a variable.

For Eg:

Name = "shreenav"

Here, Name is a variable which contains string type data "shreenav".

3. Describe three different data types.

i. Numeric Datatypes: These are the datatypes which represent numerical values like:

Int: Integer with no decimal values. Eg: 2, 3, 4

Float: Integers with precision. Eg: 3.14, 5.6777

Complex: Complex numbers like $3i+2j$ etc

ii. String Datatype: Sequence of characters in “ ” or ‘ ’ .Eg: “Shreenav”, ‘dhakal’

iii. List Datatype: Collection of different types of data which is similar to arrays in C/C++.

Eg: [1,2,3,4,5]

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

An expression is a combination of operator and operands.

For eg: $a+b$ is an expression where a and b are operands and ‘+’ is an operator.

The work of an Expression is to produce a value. For eg: $3+4$ is an expression and it produces a value 7.

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

Here, `spam = 10` is a statement. Because, a statement is used for creating variables.

Spam is variable whose value is 10.

The main difference between an expression and a statement is that Expression is used to produce values like $3+4$ expression produces value ‘7’. But Statement is used to create variables like `a = 5` is a statement where the `a` is the variable that is produced.

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

```
bacon = 22
```

```
bacon + 1
```

After running the code, the variable bacon still contains value 22. In order to increment the value of bacon by 1, we must use the following expression :

```
bacon = bacon + 1 or bacon += 1
```

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

“spam” + “spamspace”

“spam” * 3

The values of both the term is “spamspacespam”

The first term is known as string concatenation where 2 strings are concatenated.

The second term is known as string multiplication where copies of a string are added onto the same string.

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

A variable in python can start with a letter or an underscore(_) however it cannot start with a digit.

Since eggs start with a letter so eggs is a valid variable .However, 100 starts with a digit so it is not a valid variable.

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

int(x), float(x) and str(x) are the three functions to get the integer, floating-point and string version of a value “x” (say).

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

‘I have eaten’ + 99 + ‘burrito’

An integer and a string cannot be concatenated using ‘+’ operator. ‘+’ operator is used only when concatenating 2 strings.

However, ‘ , ’ comma operator can be used to concatenate string with an integer.

‘I have eaten’ , 99, ‘burrito’