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' (values)

-87.8 (values)

- (expression)

/ (expression)

* (expression)

6 (value)

2. What is the difference between string and variable?

**Ans:**

A string is a sequence of characters. Strings are immutable. Eg: ‘hello’, “World”, “99”.

Strings do not take part in mathematical expressions. Eg:

print( 20/’apple’)

This will give us an error.

A variable is an entity in programming language that can take the value of any data-type and data. Eg if c is a variable, then c can take anything that is assigned to it. Like c=10, c=”Hello World”, c= True, etc.

Variables (with numeric data-type) take part in mathematical expressions. Eg:

c=10

d=5

print(c+d)

The output is 15

3. Describe three different data types.

**Ans:** Three different examples of data-types are Numeric, Sequence type and Boolean.

Numeric: It is the data-type that involves numbers. For instance, numbers like 8, 36, 15.7 and even complex numbers. This data-type is further divided into 3 types that is datatype int, float and complex numbers.

Sequence: It is the data-type that includes order of collection of characters or python objects. Even this data-type is further divided into 3 sub-categories namely strings, lists and tuples. Strings are simple immutable characters like ‘Hello World!’. Lists are a collection of objects in one dimensions like arrays. For instance: a=[‘Hello’, ’Universe’, ’Pizza’] or b=[1, 2, 5, 9]. Finally, the tuples are also the collection of objects. However, unlike lists, tuples are immutable.

Boolean: The word Boolean comes from boolean algebra meaning two valued data that is, True and False. For eg: print(5==5) will return a Boolean data-type (True). Similarly, print(9==8) will return False.

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

**Ans:** Expressions represent values. Expressions are made of identifiers, literals, and operators. Expressions are mathematical formulas that return some value after performing some calculations. For instance:

c=5

b=9

a=c+b

here we get only one value of a (=14) and hence this is an expression.

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

**Ans:** When an assigned task is done, we call that as a statement. Here in this example, we are assigning our compiler to store the value of 10 into the variable spam. An expression is a mathematical set of rules that when applied, represent values. For eg, 2+2.

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

bacon = 22

bacon + 1

**Ans:** 22

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?

**Ans:** A variable is something that can be assigned a value. We can initialize eggs = 10 or eggs = “cat” etc. On the other hand, 100 is a definite fixed value that cannot be changed. 100 cannot be equal to 0 or “apple”. Hence eggs is a valid variable name.

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

**Ans:** int(), float() and str().

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

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

**Ans:** 'I have eaten ' + '99' + ' burritos.'