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

6  : value

1. What is the difference between string and variable?

Variables are nothing but reserved memory locations to store values. This means that when we create a variable we reserve some space in memory.

Based on the data type of a variable, the interpreter allocates memory and decides what can be stored in the reserved memory. Therefore, by assigning different data types to variables, you can store integers, decimals or characters in these variables. The classification or categorization of data items such as boolean, integer, string, void, character etc. Is called its data type. Hence, “String” is a datatype, whose value can be stored in a variable to reserve some space in the memory.

1. Describe three different data types.

|  |  |  |
| --- | --- | --- |
| Data Type | Used for | Example |
| String | Alphanumeric characters | hello world, Alice, Bob123 |
| Integer | Whole numbers | 7, 12, 999 |
| Float (floating point) | Number with a decimal point | 3.15, 9.06, 00.13 |
| Character | Encoding text numerically | 97 (in [ASCII](https://whatis.techtarget.com/definition/ASCII-American-Standard-Code-for-Information-Interchange), 97 is a lower case 'a') |
| Boolean | Representing logical values | TRUE, FALSE |

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

An ****expression**** is a combination of values, variables, operators, and calls to functions. Expressions need to be evaluated. If you ask Python to print an expression, the interpreter ****evaluates**** the expression and displays the result. For example:

print(43+11) #this will print 54

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

A ****statement**** is an instruction that the Python interpreter can execute. “spam=10” is an example of assignment statement. Some other kinds of statements are while statements, for statements, if statements, and import statements etc.

An ****expression**** is a combination of values, variables, operators, and calls to functions. Expressions need to be evaluated.

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

bacon = 22

bacon + 1

22, since bacon+1 is not stored in any variable.

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

'spam' + 'spamspam' : spamspamspam

'spam' \* 3 : spamspamspam

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

There are some rules while declaring a variable. They are as follows:

* A variable name must start with a letter or the underscore character
* A variable name cannot start with a number // 100 is invalid because variables cant start with a number and must be either completely alphabetical or alpha-numeric
* A variable name can only contain alpha-numeric characters and underscores (A-z, 0-9, and \_ )
* Variable names are case-sensitive (age, Age and AGE are three different variables)

Since eggs follow all the rules above, it is a valid variable.

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

The int(), float(), and str() functions will evaluate to the integer, floating-point number, and string versions of the value passed to them

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

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

String and integer datatype cannot be concatenated. To avoid an error, 99 must be written as “99” to make it as a string or str(99) can be used to explicitly change its datatype.