*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 | Variable |
| 1. It’s a data type of Text written within single quotes( ‘ ’) or double quotes( “ ”). | 1. It’s not a data type. It is a reference to values of different data types like integer, float, string, Boolean etc. |
| Ex: var\_1= “My assignment”  Var\_2= ‘5’  The RHS side is the text of the string data type. And the LHS side, it’s the variable. | |

*3. Describe three different data types.*

Int: it’s a data type which represents all integer values. (Ex. 5,6,8,7)

Float: it’s a data type which represents all decimal values. (Ex. 5.65,8.225,5.00)

Bool: It’s a data type which represents Boolean values (True and False)

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

An expression is a combination of operators and operands. It evaluates to produce some other value.

An expression usually refers to a piece of code that can be evaluated to a value.

Ex: 7\*2+5

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

An expression is a combination of operators and operands. It evaluates to produce some other value.

An expression usually refers to a piece of code that can be evaluated to a value.

Ex: 7\*2+5

A statement refers to a piece of code that executes a specific instruction or tells the computer to complete a task.

Ex: X=20

A statement doesn’t yield a value but instead performs a certain action.

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

bacon = 22

bacon + 1

though It will print 23, the value of variable bacon will remain 22, since the increment has not been reassigned to bacon (bacon+=1)

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

'spam' + 'spamspam' : 'spamspamspam' (it is concatenation)

'spam' \* 3= ‘spamspamspam’ (\*3 will iterate the value three times)

Both will print the same value.

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

A variable name can’t start with a number. The reason is as follows:

The compiler goes through seven different phases in which the first phase is lexical analysis, also called as tokenization. In this phase, the program is scanned character by character and converted into a meaningful sequence of characters. This meaningful sequence of characters is called a token.

The compiler gets confused if is a number or an identifier until it reaches the whitespace or in the case, if an alphabet comes after the numbers.

Variables could start with number, but that requires the compiler’s tokenizer to be more complicated. The tokenizer’s regular expression engine would have to backtrack when it first thinks it found a variable name to find an integer or float constant.

So, ‘eggs’ is a valid variable name but not ‘100’.

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

int() : To convert into an integer

float(): To convert into a float

str(): To convert into string

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

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

The ‘+’ symbol operates as a concatenator with string data types.

‘I have eaten’ and ‘burritos’ are of string data type, whereas 99 is an int data type.

So, the concatenation of two different data types will show an error.

Fixing of the error can be done in two ways:

1. Keep 99 within single/double quotes. It will change int to str data type.
2. Change the data type of integer 99 to text 99 by replacing 99 with str (99).