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.

|  |  |
| --- | --- |
| **VALUES** | **EXPRESSIONS** |
| ‘hello’ | \* |
| -87.8 | - |
| 6 | / |
|  | + |
|  |  |

2. What is the difference between string and variable?

**String:** String is made up of characters. It can include letters, words, phrases or symbols.

**Variable:** Variables are containers used to store data. They take up memory space. After storing they can be accessed or modified.

3. Describe three different data types.

The different Data types are:

* **String**: It is a collection of Unicode characters like letters, symbols. It is a collection of one or more characters put in a single quote, double quote or triple quote.

For e.g., ‘hello’ , “Tom” , ‘“ This is a string data type ’”

* **Numbers**: These are numerical values like integers (2, -3, 0), floating numbers (5.789) and complex numbers (2+3j)
* **Boolean**: This stores data of the form True or False. It represents truth value of an expression.

For e.g., 0==1 , is False

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

An expression is made up of operands and operators. It can also contain identifiers.

The expression produces some value or result after being interpreted by the python interpreter. Unlike statement, expressions are evaluated for some result.

For e.g., x =10 + 20 is an expression. Here, ‘x’ is the identifier, 10 and 20 are operands, ‘+’ is the operator. This expression gives the result, 30

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

|  |  |
| --- | --- |
| **Statement** | **Expression** |
| It is used for creating variables or displaying values | It is a combination of identifiers, operands and operators |
| They are not evaluated for any result. They may or may not produce result.  For e.g., x=10 , does not produce result But print(x) , gives result as 10 | They are always evaluated for some result.  For e.g., 10 > 17 , gives result as False |
| They are not expressions | They are also statements |
| Every line of code that we write in a programming language is a statement | All expressions are statements. But all statements are not expressions |

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

|  |  |  |
| --- | --- | --- |
| **Input** | **Output** | **Remarks** |
| bacon = 22  bacon + 1 | 22 | Since here, we are not assigning , If we had given bacon = bacon + 1 , then result is 23 .  But here , only given bacon = 22, so end result is 22 |

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

|  |  |  |
| --- | --- | --- |
| **Input** | **Output** | **Remarks** |
| 'spam' + 'spamspam' | ‘spamspamspam’ | For both result is the same |
| 'spam' \* 3 | ‘spamspamspam’ |  |

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

Variable name in python can start with letters or underscore, but they cannot start with numbers.

Here ‘eggs’ starts with a letter (lowercase ‘e’), so it is valid.

Here ‘100’ starts with digit ‘1’. Hence it is invalid.

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

|  |  |  |  |
| --- | --- | --- | --- |
| **What to use to get below** | **Functions to use** | **Input** | **Output** |
| integer | int() | int(2.39) | 2 |
| float | float() | float(33) | 33.0 |
| string | str() | str(33) | ‘33’ |
|  |  |  |  |

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

|  |  |
| --- | --- |
| **Input** | **Output** |
| 'I have eaten ' + 99 + ' burritos.' | We get an Error |
| 'I have eaten ' + ‘99’ + ' burritos.' | ‘I have eaten 99 burritos.’ |

Here we are trying to concatenate string + integer + string. Since they are of different data types, we get error. To rectify it, we should also convert 99 which is an integer to string. We can do this by placing 99 under quotes, ‘99’.