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**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.**

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**'hello'**

**-87.8**

**-**

**/**

**6**

**ANS:** Expression -> \*, -, /, + Value -> ‘hello, -87.8, 6

**2. What is the difference between string and variable?**

**ANS:** A string is a value, the data itself. Whereas a variable is used to reference the value. For example, let’s consider the below statement:

name = “Shiva”

Here, the value (data) that we want to use is “Shiva” which is a string (data type). To use this value in future we reference it using a variable which is ‘name’. Any action that we do with the variable name will be done to the value which the variable references.

print(name) -> ‘Shiva’

**3. Describe three different data types.**

**ANS:** Following are the different data types available in python:

* INTEGER (int) -> This data type indicates Whole numbers like 257, 0, -85, 99 etc.
* FLOATING-POINT (float) -> This data type indicates Decimal numbers like 3.1459, 8.5, -9.7, 5.0 etc.
* STRING (str) -> This data type indicates a group of characters like “Shiva”, “Nostokella”, “A” etc.
* COMPLEX (complex) -> This data type indicates imaginary numbers like 1+2j, 7j, -97-100j etc,
* BOOLEAN (bool) -> This data type either indicates a **True** (whose int representation is 1)or a **False** (whose int representation is 0).

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

**ANS:** An expression is made up of mathematical operators, variables & values. Expressions perform operations on the variables & values to get the required output. The operations could be mathematical or logical.

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

**ANS:** After performing operations on the data, an Expression results in an output (of those operations). A statement does not perform any operations on the data and thus does not have any output (it is just stated like a fact).

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

**bacon = 22**

**bacon + 1**

**ANS:** The first line is a statement indicating that the ‘bacon’ variable references the int value 22. The second like is an expression whose output will be 23.

Since we have not updated the value referenced by the variable ‘bacon’, it still contains the same int value 22.

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

**'spam' + 'spamspam'**

**'spam' \* 3**

**ANS:** Both the above lines of code are Expressions. The result of which are:

‘spam’ + ‘spamspam’ -> ‘spamspamspam’

‘spam’\*3 -> ‘spamspamspam’

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

**ANS:** Following are some of the rules when defining a variable in python:

* Variable names should always start with alphabets
* Variable names should not contain special characters like \* % & ^ $ # @ etc.
* Variables names can contain numbers but cannot start with them
* It is recommended to start variable names with lowercase letters though it is not a strict rule.

Thus as per above rules, ‘eggs’ is a valid variable name however ‘100’ is not. Especially since python will interpret 100 as an int value (data) and not a variable name.

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

**ANS:** The three functions that can be used are:

* INTEGER -> int(value)
* FLOATING-POINT -> float(value)
* STRING -> str(value)

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

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

**ANS:** The above expression causes an error because we are trying to add an int value to a str value. In order to fix the error we can convert the int value to str value using the below methods:

‘I have eaten ‘ + ‘99‘ + ‘ burritos’ -> ‘I have eaten 99 burritos’

‘I have eaten ‘ + str(99) + ‘ burritos’ -> ‘I have eaten 99 burritos’