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.

\* **- multiplication**

'hello' - **string**

-87.8 **- float**

- **- difference OR subtraction**

/ **- division**

* **-addition**

6  **- integer**

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

A string is type of variable consists of sequence of characters arranged such as words, sentences. A variable is a keyword which is used to assign a constant / a value to it and used for utilizing the value in any place wherever it is required in the code.

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

There are many data types present in Python some of them are: Integers, float, string, Boolean.

1. Integers, float: These are numerical data types which consists of all numerical values. Integers have numbers from all positive to all negative whereas float data type consists of all integers including the decimal values.
2. String: The data type which contains alpha/ alphanumeric values are called strings.
3. Boolean: Booleans are considered as the computer data types which means Boolean consists of only binary values: zero and one. It can also be represented as True or False.

There are some more data types present in Python which can be categorized as Primitive and non-primitive data types on a higher level.

Primitive data types consist of integers, float, strings and Boolean values. Whereas non- primitive data types consist of lists, tuples, sets, dictionaries.

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

An expression is a combination of mathematical operation of two values combined to get a value to it.

Ex: i. points= 20

percentage= points/ 100; // Right side value will be represented as an expression .

ii. quad\_eq\_sol = sqrt(b\*\*2-4\*a\*c)/2 a //root of quadratic eq to find value of ‘x’.

in the above eq, b\*\*2 and 4\*a\*c will be represented as two diff expresssions.

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

If we add mathematical operator to the integer value, considering only the right side value will be considered as an expression, if we assign this expression to any variable, then the whole line of code will be represented as a statement.

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

**bacon = 22**

**bacon + 1**

**Ans:** 23

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

**'spam' + 'spamspam'**

**'spam' \* 3**

ANS: i. spamspamspam

ii. spamspamspam

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

As per the variable naming convention, a variable name should start only with alpha character. Variable consists of alpha numeric characters. It should not contain any special characters and should start with only the alphabet character.   
That is the reason why ‘eggs’ is considered as valid variable name, ‘100’ doesn’t.

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

To convert one type of variable to other data type we use the property called explicit type cast where we explicitly convert the existing data type of a variable to another type. For that, we just need to use < explicit data\_type> ( variable OR value ).

Ex: Let’s say you have variable A with value 10

A=10.

Integer format: int(A) // result= 10 ( type= int)

Float: float (A) // result= 10.0 (type=float)

String: str(A) //result=’10’ (type = string)

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

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

Below is the error that’ll pop-up when we execute the above expression.

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TypeError Traceback (most recent call last)

[<ipython-input-1-1303a6f1236f>](https://localhost:8080/) in <cell line: 1>()

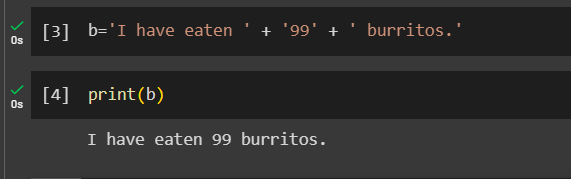
----> 1 a= 'I have eaten ' + 99 + ' burritos.'

TypeError: can only concatenate str (not "int") to str

It is because, in the above expression we are concatenating string data type to integer data type. In usual scenarios, string can combine/ concatenate only to string data type. If you want the expression to be valid, you want to convert the other data types into string format.

Below is the solution for it.

**'I have eaten ' + ‘99’ + ' burritos.'**(executed in google collab)

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