**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.**

\* :- Mathematical Operator

'hello' :- Value

-87.8 :- Value

- :- Mathematical Operator

/ :- Mathematical Operator

+ :- Mathematical Operator

6 :- Value

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

**String :-**

* A string is a data type used to represent a sequence of characters, such as letters, numbers, and symbols.
* It is enclosed within single (' '), double (" "), or triple (''' ''' or """ """) quotes in most programming languages.

**Variable :-**

* Variables are symbols that you can use to store data in a program.
* Variables are used to store and manage data in a program.
* Variables have a name (identifier) that allows you to refer to the stored data by that name.

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

**Three different data types :-**

1. **Integer(int):**

* An integer data type is used to represent whole numbers, both positive and negative, without any fractional or decimal part.
* Integers are typically used for counting, indexing, and performing arithmetic operations like addition, subtraction, multiplication, and division.

1. **Float:**

* A float data type is used to represent numbers with a decimal point or fractional component. These numbers are also known as real numbers.
* Floats are used for tasks involving measurements, scientific calculations, and any situation where precision with decimal points is required.

1. **String:**

* A string data type is used to represent sequences of characters, such as letters, numbers, and symbols.
* Strings are versatile and used for handling textual data. They can store text of varying lengths, including empty strings.

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

* An expression is a construct made up of variables, operators, and method invocations, which are constructed according to the syntax of the language, that evaluates to a single value.

**What expressions do:**

* Expressions, when evaluated, produce a value or result.
* They are used to perform calculations, make decisions, and manipulate data in a program.
* Expressions are the building blocks of code, as they allow you to work with data and control program flow.

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

**Expression:-**

* An expression is a combination of values, operators, variables, and function calls that can be evaluated to produce a single value or result.
* Expressions typically return a value, and this value can be used as part of a larger expression or assigned to a variable.
* Expressions can appear within statements.

**Statement:-**

* A statement is a complete line of code that performs an action or a task. Statements are executed one after the other in a program.
* Statements can include assignments, control structures (e.g., if statements, loops), function definitions, and more.
* Unlike expressions, statements do not necessarily produce a value as their primary purpose is to execute a specific operation or control the flow of the program.

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

bacon = 22

bacon + 1

:-

bacon = 22

bacon will contain only 22, as original value assigned to **bacon** (which is **22**) remains unchanged after the addition operation.

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

'spam' + 'spamspam'

'spam' \* 3

:-

'spam' + 'spamspam'

**Result :-** 'spamspamspam'

'spam' \* 3

**Result:-** 'spamspamspam'

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

:-

* Variable names typically need to start with a letter (a-z or A-Z) or an underscore (\_). This is a common rule in many programming languages.
* "eggs" starts with a letter, 'e', and is therefore a valid variable name.
* "100" starts with a digit, '1', which is not allowed as the first character in many programming languages. Variable names cannot start with a number.

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

**Following functions to convert a value to different data types**

1. **Int():** This function can be used to convert a value to an integer.
2. **float():** This function can be used to convert a value to a floating-point number.
3. **str():** This function can be used to convert a value to a string.

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

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

* The expression **'I have eaten ' + 99 + ' burritos.'** causes an error because it attempts to concatenate a string, an integer (99), and another string without explicit conversion.
* To fix this error, we have to convert integer (99) to a string using the **str()** function, and then perform the string concatenation.

corrected version:

'I have eaten ' + str(99) + ' burritos.'