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' : Values

-87.8 : Values

-

/ : Expression

* : Expression

6 : Values

2. What is the difference between string and variable?

A variable is a container for storing data of different types, including strings, while a string is a specific type of data that represents a sequence of characters.

3. Describe three different data types.

Integer: An integer is a data type that represents whole numbers, both positive and negative, without any decimal or fractional parts. For example, -3, 0, and 5 are all integers.

Float: A float is a data type that represents decimal numbers, For example, 3.14159 and -0.25 are floats.

Boolean: A Boolean is a data type that represents two values, true and false. Boolean values are used to make logical decisions and comparisons in programming.

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

An expression is made up of one or more operands and one or more operators, and it represents a value or a computation that can be evaluated to produce a result.

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

the main difference between an expression and a statement is that an expression produces a value, while a statement performs an action or a task. An expression can be part of a statement, as in an assignment statement where the right-hand side is an expression.

An assignment statement, such as "spam = 10", is a statement that assigns the value of 10 to the variable "spam"

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

bacon = 22

bacon + 1

After running the code, the variable "bacon" contains the value 22, because the expression "bacon + 1" does not modify the value of "bacon" but instead evaluates to 23.

To update the value of "bacon" to 23, the expression result should be assigned back to the variable, like this:

CODE :

bacon = 22

bacon = bacon + 1

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

'spam' + 'spamspam'

'spam' \* 3

The values of the two terms would be:

'spam' + 'spamspam': This expression concatenates two strings, 'spam' and 'spamspam', to produce a new string 'spamspamspam'. So the value of this expression is the string 'spamspamspam'.

'spam' \* 3: This expression multiplies the string 'spam' by 3, which results in a new string 'spamspamspam'. So the value of this expression is also the string 'spamspamspam'.

Therefore, both expressions produce the same result, which is the string 'spamspamspam'.

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

In programming, variable names must follow certain rules and conventions to be considered valid. Some of these rules depend on the programming language being used, but in general, variable names should:

Start with a letter or an underscore (\_)

Not start with a number

Contain only letters, numbers, and underscores

Not be a reserved keyword or a built-in function in the programming language

Based on these rules, 'eggs' is a valid variable name because it starts with a letter ('e') and contains only letters. However, '100' is an invalid variable name because it starts with a number, which is not allowed. Variable names must start with a letter or an underscore, and numbers can be included as part of the name but not as the first character.

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

int(): This function can be used to convert a value to an integer. If the input value is a string, it must be a valid integer literal, otherwise a ValueError will be raised.

float(): This function can be used to convert a value to a floating-point number. If the input value is a string, it must be a valid floating-point number literal, otherwise a ValueError will be raised.

str(): This function can be used to convert a value to a string. It returns the string representation of the input value.

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 with an integer value, which is not allowed .

To fix the error, we need to convert the integer value to a string before concatenating it with the other strings. This can be done by using the str() function to convert the integer to a string:

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

Now the integer value is converted to a string before concatenating, and the expression will produce the desired output without any errors:

'I have eaten 99 burritos.'