Q1. 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.

\*

'hello'

-87.8

-

/

6

* Values: 'hello', -87.8, 6
* Expressions: \*, -, /, +

Q2. What is the difference between string and variable?

* A string is a data type that represents a sequence of characters (letters, numbers, symbols) enclosed within single ('') or double ("") quotes.
* A variable is a name that refers to a value. It can hold different types of data, including strings, numbers, and more complex data structures. Variables allow you to store and manipulate values in your programs.

Q3. Describe three different data types.

* Integer: Represents whole numbers without any fractional component, e.g., 5, -3, 0.
* Float (Floating-point number): Represents real numbers with a fractional component, e.g., -87.8, 3.14.
* String: Represents a sequence of characters, e.g., "hello", "123", "example".

Q4. What is an expression made up of? What do all expressions do?

* An expression is a combination of values, variables, and operators that can be evaluated to produce a result. Expressions can perform calculations or manipulate data.
* All expressions have a value associated with them. They can be used to compute values or perform operations, and they are the building blocks of more complex operations in programming.

Q5. This assignment statements, like spam = 10. What is the difference between an expression and a statement?

* An expression is a piece of code that produces a value when it's executed. It can be a simple value, a combination of values, or a function call.
* A statement is a line of code that performs an action or an operation. It doesn't necessarily produce a value. Assignments, loops, conditionals, and function definitions are examples of statements.

Q6. After running the following code, what does the variable bacon contain?

bacon = 22

bacon + 1

The variable 'bacon' still contains the value 22 because the second line (bacon + 1) calculates the result (23) but doesn't store it back into the 'bacon' variable. If you want to update the value of 'bacon', you would need to reassign it: bacon = bacon + 1.

Q7. What should the values of the following two terms be?

'spam' + 'spamspam'

'spam' \* 3

* 'spam' + 'spamspam': This expression concatenates two strings, resulting in 'spamspamspam'.
* 'spam' \* 3: This expression repeats the string 'spam' three times, resulting in 'spamspamspam'.

Q8. Why is eggs a valid variable name while 100 is invalid?

Variable names in most programming languages need to follow certain rules. They can't start with a number, and they can't be a reserved keyword. 'eggs' follows these rules and is a valid variable name. However, '100' starts with a number, which is not allowed as a starting character for a variable name.

Q9. What three functions can be used to get the integer, floating-point number, or string version of a value?

The functions are:

* int(): Converts a value to an integer.
* float(): Converts a value to a floating-point number.
* str(): Converts a value to a string.

Q10. Why does this expression cause an error? How can you fix it?

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

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