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.

\*

'hello'

-87.8

-

/

6

Answer

Values: 'hello', -87.8, 6

Expressions: -, /, +

2. What is the difference between string and variable?

String: A string is a data type that represents a sequence of characters, typically enclosed in quotes (e.g., 'hello').

Variable: A variable is a symbolic name associated with a value that can change during program execution. It acts as a container to store data (e.g., name = 'hello').

3. Describe three different data types.

Three Different Data Types

Integer: Whole numbers without decimals (e.g., 5, -10).

Float: Numbers with decimal points, allowing for fractions (e.g., 3.14, -0.5).

String: A sequence of characters used to represent text (e.g., 'hello', "123").

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

Operands: Values or variables (e.g., 5, x).

Operators: Symbols that perform operations (e.g., +, -, \*, /).

All expressions evaluate to a value based on the operands and operators.

5. This assignment statements, like spam = 10. What is the difference between an expression and a statement?  
  
Expression: A combination of values and operators that evaluates to a value (e.g., 5 + 3).

Statement: A complete instruction that performs an action, like assigning a value (e.g., spam = 10). Statements do not return values.

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

bacon = 22

bacon + 1  
  
After running the code, the variable bacon contains 22. The expression bacon + 1 does not change the value of bacon since it is not assigned back to bacon.

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

'spam' + 'spamspam'

'spam' \* 3   
  
Here's the answer:

'spam' + 'spamspam' evaluates to 'spamspamspam' (string concatenation).

'spam' \* 3 evaluates to 'spamspamspam' (string repetition).

8. Why is eggs a valid variable name while 100 is invalid?  
  
In Python, eggs is a valid variable name because it starts with a letter, while 100 is invalid because it begins with a number13. Python variable names must start with a letter or an underscore123. They can contain letters, numbers, and underscores, but the first character cannot be a digit135.

9. What three functions can be used to get the integer, floating-point number, or string version of a value?  
  
The int(), float(), and str() functions can be used to obtain the integer, floating-point number, or string version of a value, respectively123.

int(): Converts a number or string to an integer1. If a floating-point number is passed, it truncates the decimal part1.

python

int(5.6) # Output: 5

int("10") # Output: 10

float(): Converts a number or string to a floating-point number12.

python

float(5) # Output: 5.0

float("3.14") # Output: 3.14

str(): Converts its argument into a string15.

python

str(10) # Output: '10'

str(3.14) # Output: '3.14'

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

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

This expression causes an error because you're trying to concatenate a string ('I have eaten ' and ' burritos.') with an integer (99) using the + operator. Python doesn't implicitly convert the integer to a string in this case.

How to fix it:

You need to explicitly convert the integer 99 to a string using the str() function.

Here's the corrected expression: