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

Q1. Ans) \* is an operator. It represents multiplication

‘hello’ is a value. It is a string.

‘-87.8’ is a value. It is a floating-point number.

‘-‘ , ‘/’ , ‘+’ are all operators. They represent subtraction, division, addition respectively.

‘6’ is a value. It is an integer.

2. What is the difference between string and variable?

Ans: A String is a data type used to represent a sequence of characters, such as letters, numbers, and symbols.

But a variable is a named container in a program that can hold different data types, including strings.

3. Describe three different data types.

Ans: Here are 3 different data types:

1. Integer(int): The integer data type represents whole numbers without a fractional or decimal component.
2. Float: The float data type is used to represent numbers with a decimal point or a fractional component.
3. Boolean( bool): The Boolean data types has only two possible values: ‘True’ and ‘False’

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

Ans: An expression in programming is made up of one or more operands and one or more operators. Expressions are used to perform computations, manipulate data, and produce values.

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

Ans: An expression is a combination of operands (values or variables) and operators that can be evaluated to produce a single value.

A statement is a complete line of code that performs an action. It is a higher-level instruction that can consist of expressions.

Expressions always return a value, while statements do not return value.

Spam = 10 is a statement because it assigns the value 10 to the variable ‘Spam’.

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

bacon = 22

bacon + 1

Ans: bacon = 22 #the variable bacon is assigned the value 22.

bacon +1 means the value of the variable bacon is being incremented by 1.

Therefore, after the execution of the first two lines, the variable bacon holds the value 23.

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

'spam' + 'spamspam'

'spam' \* 3

Ans: The first term is using + operator which will perform string concatenation between the two strings and give result as ‘spamspamspam’.

The second term uses \* operator with a string and an integer operand. It will repeat the string 3 times. So the result of ‘spam’ \*3 will be ‘spamspamspam’

So both the terms will result in the string ‘spamspamspam’

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

Ans: In most programming languages, including Python, variable names must follow certain rules and conventions. These rules are in place to ensure that variable names are unambiguous and can be properly interpreted by the programming language's parser. Here are the key rules and conventions:

1. Start of the variable with a letter or underscore: (a-z,A-Z), underscore
2. Reserved words: variable name cannot be the same as reserved words or keywords.
3. Subsequent characters: alphanumeric and underscore within variable name is allowed.

So ‘eggs’ is a valid variable name, and ‘100’ is not a valid variable name.

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

Ans: int(), float() and str() are the 3 functions used for data type conversions.

Example,

Int\_value = int(value) ,

Float\_value = float(value)

String\_value = str(number)

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

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

Ans: The expression 'I have eaten ' + 99 + ' burritos.' causes an error because you are trying to concatenate a string ('I have eaten ') with an integer (99) without explicitly converting the integer to a string first. In Python, you cannot directly concatenate different data types without converting them to a common data type.

To fix this error, you should convert the integer 99 to a string using the str() function, and then you can concatenate the strings together. Here's the corrected expression:

Solution:

‘I have eaten’ + str(90) + ‘burritos.’