**Name: Abhas**

**Email: abhas2495@gmail.com**

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:**

\* Multiplication operator

‘hello' - a string

-87.8 - a floating-point number

6 - an integer

* Subtraction and Negation operator

+ Addition Operator

/ division operator

2. What is the difference between string and variable?

**String** - A string is a data type that represents a sequence of characters. It is used to store and manipulate textual data.

**Variable -** A variable is a named storage location in a computer's memory that holds a value. It is used to store and manipulate data in a program.

3. Describe three different data types.

**Integer (int):**

The integer data type represents whole numbers without any decimal points.

It can hold both positive and negative numbers, including zero.

Examples of integers: -5, 0, 42

**Floating-Point Number (float):**

The floating-point number data type represents numbers with decimal points.

It can hold both positive and negative numbers, as well as numbers with fractions or exponential notation.

Examples of floating-point numbers: 3.14, -0.5, 2.71828.

**String:**

The string data type represents a sequence of characters, such as letters, digits, and symbols.

It is used to store and manipulate textual data.

Strings are typically enclosed in quotation marks (single or double).

Examples of strings: "Hello,

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

**Values:** These can be literals, such as numbers (e.g., 5, 3.14) or strings (e.g., "Hello"), or they can be the result of variable assignments or function calls.

**Variables:** These are named storage locations that hold values. Variables can be used within expressions to represent or manipulate data.

**Operators:** These are symbols or keywords that perform specific operations on values or variables. Examples include arithmetic operators (+, -, \*, /), comparison operators (==, <, >), logical operators (&&, ||), and assignment operators (=).

**Function calls:** Functions are reusable blocks of code that perform specific tasks. They can be called within expressions to perform computations or return values.

Expressions are used to perform calculations, manipulate data, and make decisions in a program. When an expression is evaluated, it produces a resulting value. The value can be assigned to a variable, used in conditional statements, passed as arguments to functions, or used in other expressions.

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

-> In the case of the assignment statement "spam = 10", the statement assigns the value of "10" to the variable named "spam". The expression within the statement is "10", which is evaluated and then assigned to the variable.

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

bacon = 22

bacon + 1

-> In the first line, the value 22 is assigned to the variable bacon. So, bacon is set to 22.

In the second line, bacon + 1 is evaluated as an expression. This expression adds 1 to the value of bacon (which is 22), resulting in the value 23. However, this expression is not assigned to any variable or used in any way, so the resulting value of 23 is not stored or saved anywhere.

Therefore, after executing the code, the variable bacon remains unchanged and still contains the value 22.

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

'spam' + 'spamspam'

'spam' \* 3

**Answers:**

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

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

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

**Answer**: 'eggs' is a valid variable name because it follows the rules of starting with a letter and using permissible characters afterward. '100' is considered invalid as it violates the rule of starting with a digit. Additionally, using meaningful variable names enhances code readability and should be preferred whenever possible.

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

**int():**

The int() function can be used to convert a value to an integer type.

**float():**

The float() function converts a value to a floating-point number.

**str():**

The str() function converts a value to its string representation.

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

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

**Answer:**

The expression 'I have eaten ' + 99 + ' burritos.' causes an error because it attempts to concatenate a string ('I have eaten ') with an integer (99) directly. In Python, you can concatenate strings using the + operator, but you cannot directly concatenate a string with a non-string value.