

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

Ans:- *,-,/,+ are expressions, and 'hello',-87.8,6 are the values.

2. What is the difference between string and variable?

Ans: - A string and a variable are two different concepts in programming:

- A string is a type of data that represents text. It's a sequence of characters enclosed in quotes. For example, 'hello' is a string.
- A variable, on the other hand, is a named location in memory where a programmer can store data and later retrieve the data using the variable name. The data stored in a variable can be of any type, including strings. For example, in the line of code `greeting = 'hello'`, `greeting` is a variable that holds the string 'hello'.

3. Describe three different data types.

Ans:- The three different data types are:-

- Integer
- Float
- strings

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

Ans:- An expression in programming is a combination of one or more values, variables, operators, and functions that the programming language interprets and computes to produce another value. Here's what an expression is made up of:

Values: These are the most basic elements in an expression. A value represents a fixed data item, such as 5, 3.14, or 'hello'.

Variables: Variables are symbols that can hold values. In an expression, you can use a variable to represent a value.

Operators: Operators are symbols that represent computations like addition (+), multiplication (*), division (/), and others.

Functions: Functions are reusable pieces of code that perform specific tasks. You can use functions in your expressions to manipulate values or variables.

'result = 3 * (4 + 5)'

In this expression, 3, 4, and 5 are values, result is a variable, * and + are operators.

All expressions in a programming language are evaluated, i.e., the system computes their result. When an expression is evaluated, it produces a value. For example, the expression `3 * (4 + 5)` evaluates to 27. This value can then be used in other expressions or can be assigned to a variable.

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

Ans: - In programming:

- An **expression** is a piece of code that evaluates to a value. It consists of values (like 2, 'hello'), variables (`x`, `spam`), operators (+, /), and can be evaluated to produce a value. For example, `2 + 2` is an expression that evaluates to 4.
- A **statement** is a complete line of code that performs some action.

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

```
bacon = 22
```

```
bacon + 1
```

Ans:- 23

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

`'spam' + 'spamspam'`

`'spam' * 3`

Ans:- a. `'spamspamspam'`

b. `'spam spam spam'`

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

Ans: - Variable names must start with a letter or underscore, not a number or reserved word. So, 'eggs' is valid, but '100' is not.

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

Ans:-

```
value = "123"
integer_value = int(value)

float_value = float(value)

string_value = str(value)
```

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

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

Ans Because an integer cannot add to the string to fix it we have to convert the integer into strings.