***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.***

\* -Expressions

'hello' -value

-87.8 -value

- -Expressions

/ -Expression

* -Expression

6 -Value

***2. What is the difference between string and variable?***

strings are specific data types used to represent textual data, while variables are containers that can hold values of different data types, including strings. Strings can be assigned to variables and manipulated using variable references.

# Assigning a string to a variable

**name = "Alice"**

# Concatenating strings using variables

**greeting = "Hello, " + name + "!" print(greeting)**

# Output: Hello, Alice!

3. Describe three different data types.

**1. Integer (int):**

* Used to represent whole numbers without decimal points.
* Examples: 10, -5, 0

**2. Float:**

* Used to represent numbers with decimal points.
* Examples: 3.14, -2.5, 0.0

**3. String:**

* Used to represent sequences of characters.
* Enclosed in quotes (single or double).
* Examples: "Hello", "123", "This is a string"

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

An expression in programming is a combination of values, operators, and variables that can be evaluated to produce a result. It's a fundamental building block of most programming languages.

**Components of an expression:**

* **Values:** These are constants or literals that represent specific data, such as numbers (e.g., 5, 3.14), strings (e.g., "Hello"), or boolean values (e.g., True, False).
* **Operators:** These are symbols that perform operations on values. Common operators include arithmetic operators (+, -, \*, /, %), comparison operators (==, !=, <, >, <=, >=), logical operators (and, or, not), and assignment operators (=, +=, -=, \*=, /=, %=).
* **Variables:** These are named containers that store values. Expressions can use variables to reference values that have been assigned to them.

**What expressions do:**

* Calculate values: Expressions are used to perform calculations and produce numerical results. For example, 5 + 3 evaluates to 8.
* Compare values: Expressions can be used to compare values and produce boolean results. For example, 5 < 3 evaluates to False.
* Assign values: Expressions can be used to assign values to variables. For example, x = 5 + 3 assigns the value 8 to the variable x.
* Control program flow: Expressions are often used in conditional statements (if, else) and loops (for, while) to determine the flow of execution in a program.

**Examples of expressions:**

* 5 + 3
* x \* 2
* "Hello, world!"
* x > 5
* x = y + z

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

An expression is a combination of values, operators, and variables that can be evaluated to produce a result. It represents a computation or a value.

A statement is a complete unit of code that performs an action. It can be a declaration, an assignment, a control flow statement (like if, for, while), or a function call.

**key difference:**

* Expressions produce values: When an expression is evaluated, it results in a value. For example, 2 + 3 is an expression that evaluates to 5.
* Statements perform actions: Statements are instructions that the computer executes. They don't produce a value directly but can have side effects, like modifying variables or controlling the program's flow.

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

**bacon = 22**

**bacon + 1**

bacon contains 22

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

**'spam' + 'spamspam' --**spamspamspam

**'spam' \* 3** -- spamspamspam

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

variable names cannot start with numbers.

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

int()

string()

float()

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

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

We will get TypeError

can only concatenate str (not "int") to str