

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.

- `= expression`
- `'hello' = value`
- `-87.8 = value`
- `- = expression`
- `/ = expression`
- `+ = expression`
- `6 = value`

2. What is the difference between string and variable?

- Difference in terms of syntax: Strings are inside single/double quotation marks. And, variables are represented without any quotation marks.
- Strings are ordered sequences. So, it is possible to do indexing and slicing to grab sub-sections of the string. While variables store data of other objects and their names do not particularly say anything about the data they have, it is always subjective.
- Variables can store any data types including strings.

3. Describe three different data types.

- Integers: These are rational numbers without any decimal points. These data types can have both positive and negative values.
- Lists: These are ordered sequences and can have many data types inside. Lists are mutable. They use square brackets and commas to separate the object inside list.
- Sets: are unordered collection of unique elements. They use {} and commas to separate the objects inside. Sets can be considered as dictionaries with only keys.

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

- Expressions are made up of operators (like +, -, /, * and //, % in python.) and operands (like numbers, variables etc.).
- Expressions can return or print the resultant values of the particular expressions.

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

- Statements do not return or print any values, while expressions do.
- Expressions can be a part of statements like... `a = b*x + 2` (where `b*x+2` is an expression)

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

```
bacon = 22
```

```
bacon + 1
```

- After running the above code, the variable `'bacon'` will still be equal to 22.

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

```
'spam' + 'spamspam'
```

```
'spam' * 3
```

- The value of both the outputs will be the same and that is `'spamspamspam'`. It is string concatenation.

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

1. `100` is an integer data type, while the name `eggs` doesn't represent any data type by default unless it is assigned with some data type. That's why it can be a valid variable.
2. The value of `100` or any number is fixed and it always represents the same value. That's why, `100` as an integer is always constant and cannot be a variable.

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

- `int()` → to get integer value of a string which only contains integers or of a floating-point number.
- `float()` → to get floating point value (or number with decimal values) of an integer or string which only contains integers or floating-point numbers.
- `str()` → to get the string version

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

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

- You cannot concatenate strings with integers or other data types except strings.
- To fix it, we should convert `99` to `'99'`.