Assignment 1 - Solutions

1. Identify which are values or expressions:

a) `'hello'` → Value (String)
b) `-87.8` → Value (Float)
c) `-` → Expression (Operator)
d) `/` → Expression (Operator)
e) `6` → Value (Integer)

2. Difference between string and variable:

a) String: A sequence of characters enclosed in quotes, e.g., `"hello"`.
b) Variable: A name that stores data or references a value. It can store strings, numbers, etc., e.g., `name = "John"`.

3. Three different data types:

a) Integer (int): Whole numbers, e.g., `10`
b) Float: Decimal numbers, e.g., `3.14`
c) String (str): Text data, e.g., `"Python"`

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

a) An expression is made up of values, variables, and operators.
b) All expressions evaluate to a value.

5. Difference between expression and statement:

a) Expression: Produces a value, e.g., `2 + 2`
b) Statement: Performs an action, e.g., `spam = 10` assigns value to a variable.

6. After running this code, what is the value of `bacon`?

```
bacon = 22
bacon + 1
```

a) Value of bacon remains `22` because `bacon + 1` doesn't assign the result back. Use `bacon = bacon + 1` to update.

7. Values of the following expressions:

a) 'spam' + 'spamspam' → 'spamspamspam'
b) 'spam' * 3 → 'spamspamspam'

8. Why is `eggs` valid and `100` invalid as a variable?

a) Variable names cannot start with a number.
b) `eggs` is valid because it starts with a letter.
c) `100` is invalid because it's a number.

9. Three functions to convert types:

a) `int()` → Converts to integer
b) `float()` → Converts to floating-point
c) `str()` → Converts to string

10. Why does this cause an error and how to fix it?

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

a) Error: Cannot concatenate a string with an integer.
b) Fix: Convert `99` to string:

'I have eaten ' + str(99) + ' burritos.'