# Assignment_1

1. **What are the differences between operators and values in the following?**

- *
- 'hello'
- -87.8
- /
- +
- 6

**Ans.**

- * - This is an arithmetic operator used for multiplication.
- 'hello' - This is a string.
- -87.8 - This is a floating point value.
- / - This is an arithmetic operator used for division.
- + - This is an arithmetic operator used for addition.
- 6 - This is an integer value.

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

- spam
- 'spam'

**Ans.**

A variable can be thought of as a kind of a storage space for example an empty box in which we can put something. We can use variables to store anything. Here, spam is a variable.

A string is the information/data which one would like to store in a variable. Here, 'spam' is a string.

Here we can use the variable spam to store the string value 'spam'.

```
spam = 'spam'
```

### 3. Describe three different data forms.

### Ans.

There are many different data types. Here are 3 data type -

- Numeric - This type contains int, float and complex. We can use integers, decimal numbers/floating-point numbers and complex numbers.
- Text - This type contains str. We can use strings/characters.
- Boolean - This type contains True and False.

### 4. What makes up an expression? What are the functions of all expressions?

### Ans.

An expression is a combination of values, variables, and operators. Expressions need to be evaluated. For example, 2*4 - 5 is an expression.

Expressions can be assigned to variables. This way the value of the expression is stored in the variable and can be used in the program.

For example if we create a variable named result.

```
result = 2*4 - 5
```

Here result contains the value of the expression, that is, 3 and it can be used in the program.

### 5. In this chapter, assignment statements such as spam = 10 were added. What's the difference between a declaration and an expression?

### Ans.

A declaration is when we mention a variable to be used in the program but we do not assign anything to it, that is, it is an empty box. For example, in C a variable declaration can be

```
int a;
```

But Python is a dynamically typed language hence it does not have the concept of variable declaration.

Expressions are explained in the answer above.

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

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

### Ans.

Here, the variable bacon is initialised with the value 22. In the next statement, there is an expression, which can be evaluated to the value 23. This expression can be stored into a new variable or the same variable bacon or maybe it can be printed on console.

But this expression does not affect the variable bacon as of now because it is not being stored in the same variable.

Hence, after running the code snippet, the value of the variable bacon remains the same, that is, 22.

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

```
'spam' + 'spamspam'
'spam' * 3
```

**Ans.**

The first expression yields 'spamspamspam' as it concatenates both the string objects.

The second object yields 'spamspamspam' as it replicates the string object 'spam' 3 times.

### 8. Why is it that eggs is a true variable name but 100 is not?

**Ans.**

The variables in Python can be named using the pre defined set of rules of naming the variables. The name 'eggs' goes with the rules but '100' doesn't.

This can be explained by one of the rules which states that a variable name must only start with a letter or underscore character.

### 9. Which of the following three functions may be used to convert a value to an integer, a floating-point number, or a string?

**Ans.**

To convert a value to integer, float or string we can use type-casting.

For example, consider the following snippet for type-casting.

```
x = True

int(x)   #casts x to integer
float(x) #casts x to float
str(x)   #casts x to string
```

### 10. What is the error caused by this expression? What would you do about it?

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

**Ans.**

This code snippet causes the error because it is trying to concatenate strings with an integer, which is against the rule. Strings can only be

concatenated with strings.

To resolve this, we can use the type-casting mentioned in the above answer.

For example, consider the following code snippet.

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

Now there will not be any error.