Assignment-1

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**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.**

i) \* —> Arithmetic operator ( Expression )

ii) ’hello' —> String ( Value )

iii) -87.8.—> Float number ( Value )

iv) - —> Arithmetic operator ( expression )

v) / —> Arithmetic operator ( expression )

vi) + —> Arithmetic operator ( expression )

vii) 6 —> Integer ( Value )

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

Ans.) A string is a data which is combination of characters declared between single or double quotes (“ ”) where as a variable is an instance declared in local or global scope which stores value/data in it, this value can be of different datatype such as integer, float, string, list etc.

A string can be stored in variable.

**3. Describe three different data types.**

Ans.) The three types of datatypes are :-

1. **int ( Integer )**: ‘int’ datatype is a type of numeric data stored in variable/instance which only stores whole number.
2. **List** : list are the datatype in python that stores any datatype value in it. They contain multiple items. It expands its size dynamically and are heterogenous in nature. They are mutable and and can also contain duplicates. Lists in python are declared using square brackets ‘[]’.
3. **Sets** : Sets in python are another type of collection datatype which contain multiple items in them. They are mutable in nature and are heterogenous as well which implies that like lists they can also contain different datatype variables. Sets cannot contain duplicate which is the main difference between sets and lists. They are declared using round brackets ‘()’.

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

Ans.) An expression is a combination of values, variables and operators which can be evaluated in order to produce a result. These expressions evaluate a condition for giving boolean output if it is an boolean expression or they perform calculation if it is an arithmetic expression. These expressions are also used for control flow. There are various types of expressions in python:

* **Arithmetic expression** - They are the combination of values and arithmetic operators which perform calculation and gives an output.

Ex- **a/b** is an expression for dividing a by b.

* **Boolean expression -** These expressions check whether the given condition meet and produce output in true or false.

Ex- **a>b** in this expression if a is greater than b the output of the expression will be

**True** else it will be false.

* **List comprehension -** In python, an expression is defined in order to get a required output.

Ex- **x\*10 for x in range 4**  in this expression the generated values of x will be 0,10,20,30.

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

**Ans.)** An expression is a combination of values and operators which always returns a value.

for Ex- a\*b will return the product of a and b.

While on the other hand, statements are a complete line of code which are responsible for performing some actions. They do not necessarily return a value.

for Ex- if x>0:

print(x)

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

bacon = 22

bacon + 1

Ans.) The variable ‘bacon’ will contain value 22 only because it has not been updated.

Bacon +1 only adds the value 1 in it temporarily but does not increment it by +1.

To make an increment in bacon by +1 we need to add a statement:

bacon=bacon+1 or bacon+=1

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

'spam' + 'spamspam'

'spam' \* 3

Ans.) In both the terms, the output will be ‘spamspamspam’ which is same for both cases. However in the first case concatenation is being implied while in the second case, the string is multiplied 3 times.

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

Ans.) Because a variable name can only start with alphabet or underscore and can only contain alpha-numeric characters which means no special characters are allowed.

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

**Ans.)**

* To get the integer value of a number, int() function can be used, however this conversion can cannot be done from string to int if the string is alphanumeric.
* To get the floating-point value of an value, we can use float() function.
* To get string value of an value, we can use str() function.

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

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

Ans.) This expression causes error because it is trying to concatenate string values with integer value which is not allowed in python. To concatenate these values we need to convert int value (99) into string by typecasting. This expression can be corrected by putting 99 in double quotes (“”) or by putting 99 into str() function. Thus the corrected expression will be:-

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

**or**

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