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' - values

-87.8 - values

- - expression

/ - expression

* - expression

6 - values

2. What is the difference between string and variable?

Ans. String - a string is a datatype that is a sequence of characters and are always enclosed in single or double quotes or triple quotes . strings are immutable I.e. the original cannot be changed after its creation . different operations can be performed like slicing,concatenation etc. to create a new string.

Variable – a variable is a name that is given to a data of any type . a variable can be declared for any data types which enhances the storage and management of the values.it is accessible all throughout the programs (exception , a local var’s scope is only within the function ). Var can be reassigned to any value . In python we don’t need to declare it’s type as the data type is automatically interpreted as soon as we give the var a value.

3. Describe three different data types.

Ans.

String - a string is a datatype that is a sequence of characters and are always enclosed in single or double quotes or triple quotes . strings are immutable I.e. the original cannot be changed after its creation . different operations can be performed like slicing,concatenation etc. to create a new string. Accessing string elements is done through indexing.

Tuple – A type of data type in python which is always defined within single(first) brackets i.e. () . tuples are immutable i.e. cannot be changed/modified once they are defined and this type of data type is useful when we do not want the datas which are defined initially. It is structurally similar to list but the key difference is immutability. They can be used as keys in dictionaries due to their hashable property unlike list. Accessing tuple objects is done through indexing. Can cointain mixed data types.

List - A type of data type in python which is always defined within square(third) brackets i.e. []. lists are mutable i.e. can be changed/modified whatever the initial values maybe. . Accessing tuple objects is done through indexing. Can cointain mixed data types. They can’t be used as keys in dictionaries due to their unhashable property as they are mutable. They support various operations like concatenation , slicing etc. nested lists can be created. They are used to store ordered dataset which enhances its management capability.

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

Ans. An expression is made up of variables , constant values and operators. Variables, constants values make up operands ( e.g. – a,b,bet,5,4,”hey hi” etc.) and operators are various mathematical symbols which operate on operands and define how operands should behave. Types of various operators are arithmetic (+,-,\*,/,%,\*\*,//) , logical(and,or,not) , comparison(<,>,>=,<=,==,!=), assignment( =,+=,-=,/=,\*=,%=,\*\*=) , bitwise().

Expressions are useful as they are the building blocks of programs. Expressions are used to perform calculations using arithmetic opertors like addition, subtraction,multiplication etc. , used to perform comparison of values which conditions helps in building and control the flow of a program . Expressions are used to assign the values to variables. Expressions are used in logical operations which are used to compare the values based on various desired conditions and perform specific operations. When the expressions are evaluated they produce a value or a result which are useful for witing code and yielding results desired.

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 , variables and operators which when executed yields results. This results are the desired output of the operations which we perform to build a complete program. An expression does not have statement within it.

A statement is any complete line of code that performs a desired task an action and may give a result. This statements control the flow of code and runs sequentially after one another . A statement has expressions in it . A statement can contain multiple expressions.

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

bacon = 22

bacon + 1

Ans. 22

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

'spam' + 'spamspam'

'spam' \* 3

Ans. ‘spamspamspam’

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

Ans. There are set of rules to define a variable name i.e. :

1. they must not start with a number but can be used alongwith a letter.
2. Must not start with any operators.
3. Can start with letters ranging from a-z ,A-Z, and underscore(\_).
4. A var name must not be a pre defined function name.

So eggs is a valid variable name but 100 is not.

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

Ans.

int() function typecasts a value into integer datatype. E.g. – int(45.9) gives 45

float() function typecasts a value into float datatype . e.g. – float(89) gives 89.0

str() function typecasts a value into string data type. Eg. – str(99) gives “99”

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

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

Ans. This “ 'I have eaten ' + 99 + ' burritos.' “ expression causes an error because we are trying to concatenate strings with integer value which is not supported in python . Different types of data cannot be concatenated without changing the data types.

We can fix it by converting the 99 int value to string by typecasting it using expression str(99) and then rewriting the expression like 'I have eaten ' + str(99) + ' burritos.' Which yields results :

'I have eaten 99 burritos.'