

1. * is an expression
'hello' is a value
-87.8 is a value
- is an expression
/ is an expression
+ is an expression
6 is a value

2. Difference between "string" and "variable"

Variable is reserved memory location to store values. Data types of stored values can be string, list, integer or any other data structure. Variable must start with letter or underscore character. Variable names are case sensitive ('key' and 'KEY' are different). Variables are mutable depending upon the data type. Eg: integer data type variables are mutable and string data type is immutable

String is a datatype which is a collection of characters. It can include characters numbers or other special characters. In python , strings are enclosed in single(' ') quotes or double(" ")quotes and are immutable(once value assigned , it cannot be changed

(In python)

Name = "Vipin"

Course = 'Data Science bootcamp'

Here '**Name**' and '**Course**' are variables that hold string values "Vipin" and "Data Science bootcamp"

3. Main Data types that are generally used in python are Numeric, String, List, tuples, set and Dictionary(asked to explain 3 data types only in question)

Numeric data type :- It is used to hold numeric data values like

i) int :- contains signed integers of non-limited length(a = 10)

ii) float:- holds decimal numbers (b=10.5)

iii)complex :-holds complex value(c= 100+ 3i)

List data type :- It is used to store multiple items of different data types(in case of python) in a single variable. It is enclosed in brackets '[']'

List = [1,3,4,5,5 "games"]

Tuples :- tuples is collection of objects which are ordered and immutable(cannot be changed). Items are enclosed in paranthesis '(')'

Tup =(1,2,3,4,5,"key")

4. Expression is a combination of values, variables ,operators and function calls ,that produces a result. When expression is executed, it is evaluated and result of evaluation is further used for further computation,manipulating data or making decisions

Eg:-i) `print (5 + 4)` is an arithmetic expression producing result 9

ii) `a= "python"`
`b= "program "`
`print (a+b)` this string expression produces result "python program"

5. `Spam = 10` is an assignment statement where '10' is an expression that evaluates to value 10
Assignment statement doesn't produce value itself.it can create or update a variable
Difference between expression and statement
a)Expressions are generally evaluated to produce a value where as statements are executed to perform an action
b)Expression don't modify the program, once some value is assigned they don't produce any side effect where as statements perform I/O operations and can modify variables
c)Expressions can be nested within other expressions while statement cannot be nested directly

eg: the code demonstrate the statement

```
if x > 10:  
    print(" x is greater than 10)  
else :  
    print ( " x is less than 10)
```

6. `bacon` will contain 23
7. `'spam' *3` will produce `spamspamspam`
`'spam' + 'spamspam'` will produce `spamspamspam`
8. A valid variable name should start with letter(a-z,A-Z) or an underscore. It cannot start with digit. So 'eggs' is valid variable name while 100 is not
9. These three functions ,
`Int()`- convert value to an integer
`Float()`- convert value to floating point number
`Str()`- convert value to string
10. `'I have eaten' + 99 + ' burritos'`.
Here in this expression we are trying to concatenate string with an integer (99).
To fix the error we have to convert 99 to string . so that strings can be concatenated
Here is the correct expression
`'I have eaten' + str(99) + ' burritos'`.