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.

*

'hello'

-87.8

-

/

+

6

Solution:

Integers(Values)	**Strings**	**Expressions**	**Expression Type**			
6	‘hello’	+	Arithmetic			
-87.8(Negative Floating point Value)		-	Arithmetic			
		*	Arithmetic			
		/	Arithmetic			

2. What is the difference between string and variable?

Solution: The Main or Key differences between a strings and Variables in python are as follows:

Strings	**Variables**					
Strings are a sequence of characters in a given order The Characters are anything that can be entered within a single Keystroke	A variable is an identifier which stores a value in a memory location and to manipulate if needed Variables in programs are references to values that have types.					
Strings are always defined or declared within double quotes (“ “) or single quotes(‘).	Variables should always be enclosed or should start with an alphabet the letter, digits, and underscore					
Strings can contain whitespaces in a string variable name. Python string isspace() is a built –in method used for string handling. The is space() method returns “True” if all the	Variables should not contain any white spaces in a variable name					

characters in the string are white space characters, otherwise it will return “false”						
Strings are immutable ie once the values or variables are declared inside the string then it cannot be changed	Where as variables rare mutable ie the values inside the variables can be changed depending upon the conditions.					
“abc, 123,\,/, spaces, are some of the examples for strings	m = 22 and n = 44 and a = 50 and b = 80					

3. Describe three different data types.

Solution: The different data types available in python are:

None : when we have a variable and if that variable is not assigned with any value it then such a data type is called **None** data type normally in other languages we use null but in python we use null.

Numeric : In python numeric data types is classified into four different data types:

Int: integers are whole numbers without any decimal part involved in it example:12,17,18

Float: floating point numbers are a type of numeric data types which contain decimal part after 2nd digit for example:15.0, -200.0

Complex: complex numbers are a numeric data types which involves a whole number and an imaginary part for example:6+ij here 6 is a whole number and and j is an imaginary number

Bool (Boolean): these are the types of numeric data types which returns 1 if the condition is true and returns 0 if the condition is false.

Sequence : sequence data types are the types of data which allows you to store multiple values in an organized and efficient fashion.

Different types of sequence data types are:

List: list are mutable data types ie once we assign any value to a list we can change according to certain conditions. And lists are always enclosed within square brackets and list are always in an ordered sequence for example: lst=[1,2,3,4,5,6]

Tuples: tuples are immutable data types ie once we assign any value to a tuple we cannot change a. And tuples are always enclosed within parenthesis . and list are always in an ordered sequence for example: tupvar=(1,2,3,4,5,6) tuples can contain duplicate values.

Sets: sets are sequence mutable data types which are in unordered sequence and sets cannot contain duplicate values sets are always enclosed within flower braces for example: set={1,2,3,4,5,6,}

Strings:strings are nothing but the ordered sequence of characters strings are immutable data types and are always enclosed within double quotes.

For example: str1 = “hello”

type(str1)

<class, string>

Range:range are the types of sequence data types which specifies the number within the given range

For example: range(0,10) here the counting starts from 0 to 9

Dictionary: dictionaries are unordered mutable data types which are enclosed within the curly braces followed by a key value pair and it is indexed and does not contain any duplicate values.

For example: Dict = {1: ‘Nagraj’ , 4: ‘For’ , 6: ‘Ramanand’}

Print(Dict)

Output: Dictionary with the use of Integer Keys:

Dict = {1: ‘Nagraj’ , 4: ‘For’ , 6: ‘Ramanand’}

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

Solutions:

An expression is a combination of operators and operands which reduces to a single.

An operator indicates an operation to be performed on data.

Different types of expressions:

Primary: c = a+(5*b)

Postfix: z= a++

z = a

a=a+1

prefix: z=++a

a=a+1

z=a

unary: a++

b--

Binary: a=b

c*d

Ternary:

3 operands and one operator

Exp1? Exp2 : Exp3

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

Solution:

The assignment statement spam = 10 indicates that the variable spam assigns a value to a variable as 10 and it stores the value as 10 in the memory allocation in python which is known as python memory manager in which all variables characters and constants are stored in the python memory .

Difference between an expression and a statement are as follows:

An expression is a combination of operators, constants, variables, and function calls.

An expression can be arithmetic logical or relational or identity.

X + Y (arithmetic operation)

a=b+c (uses two operators (=) and (+)

a> b (relational expression)
a == b (logical expression)

Func (a,b) (Function call)

In a Python programs, instructions are written in the Form of statements.

A Statement in an executable part of the program and cause. the computer to carry out some action.

Types of statements:

Expression statement

Compound statement

Selection statement (if, ifelse, elif)

Iterative statement(For,while,foreach)

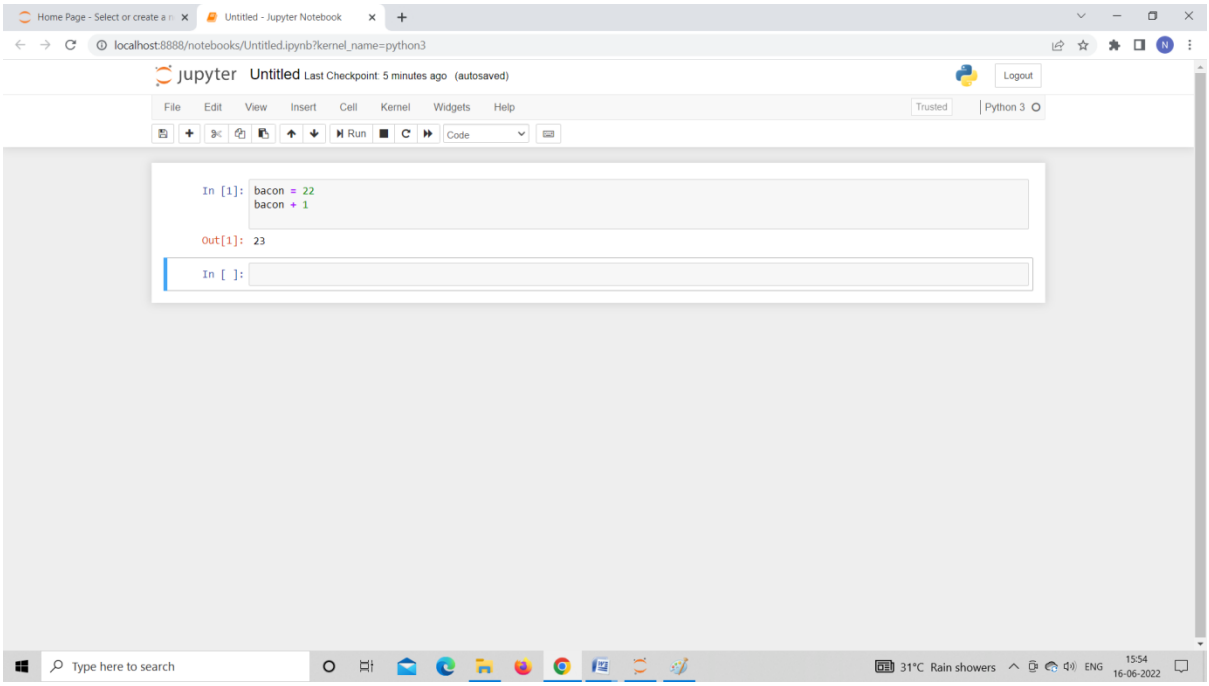
Jump Statement(Continue, break return)

Label statement(case, default)

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

bacon = 22

bacon + 1



bacon = 22

bacon + 1

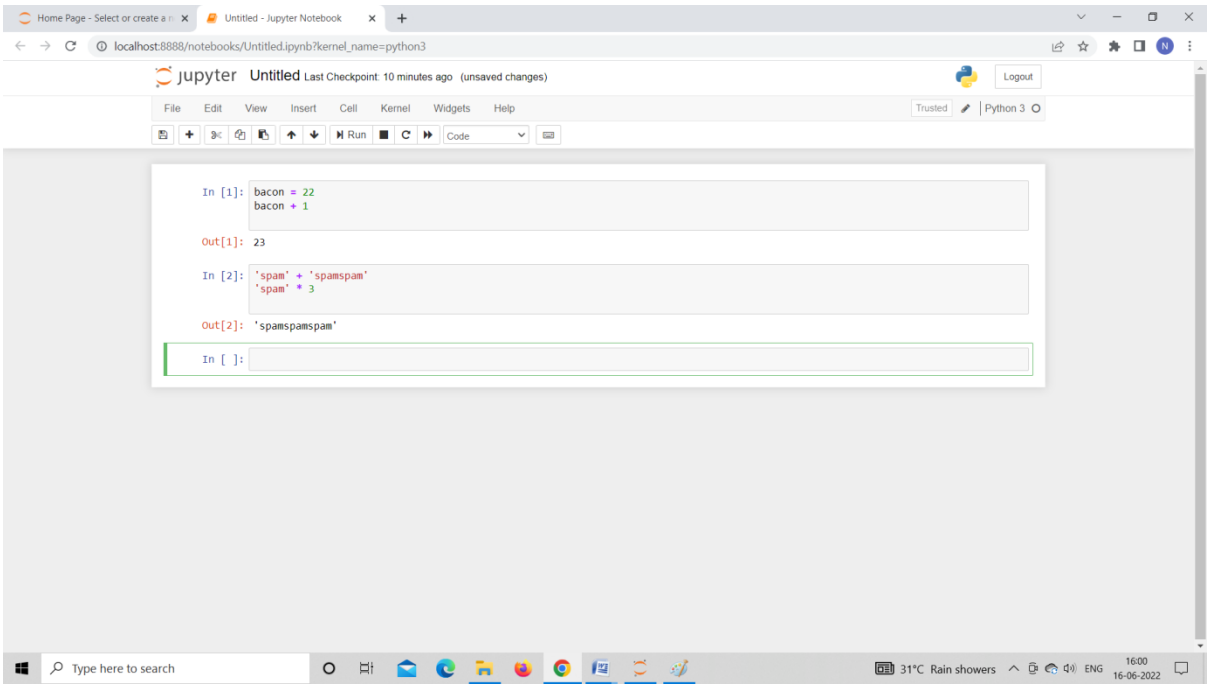
output 23 here bacon value is being incremented by 1 here bacon stores value as 22 and it is incremented by 1 and so total value is 23

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

'spam' + 'spamspam'

'spam' * 3

Solution:



Output:

‘spamspamspam'

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

Solution: egg is a valid variable name because it has started with letter where as 100 is not invalid because it does not follow AscII rules and it does not follow any rules and it its invalid since it does not contain any digits English letters, or underscores.

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

Functions which return can be used to return an integer are:

int function: returns an integer from a given object or converts a number in a given base to decimal.

Floating-point number function: :float() function is used to return a floating-point number from a number or a string.

Syntax: float(x)

String function: types of string function which returns a value are:

lower(): returns the string character in lowercase it converts all uppercase to a lowercase

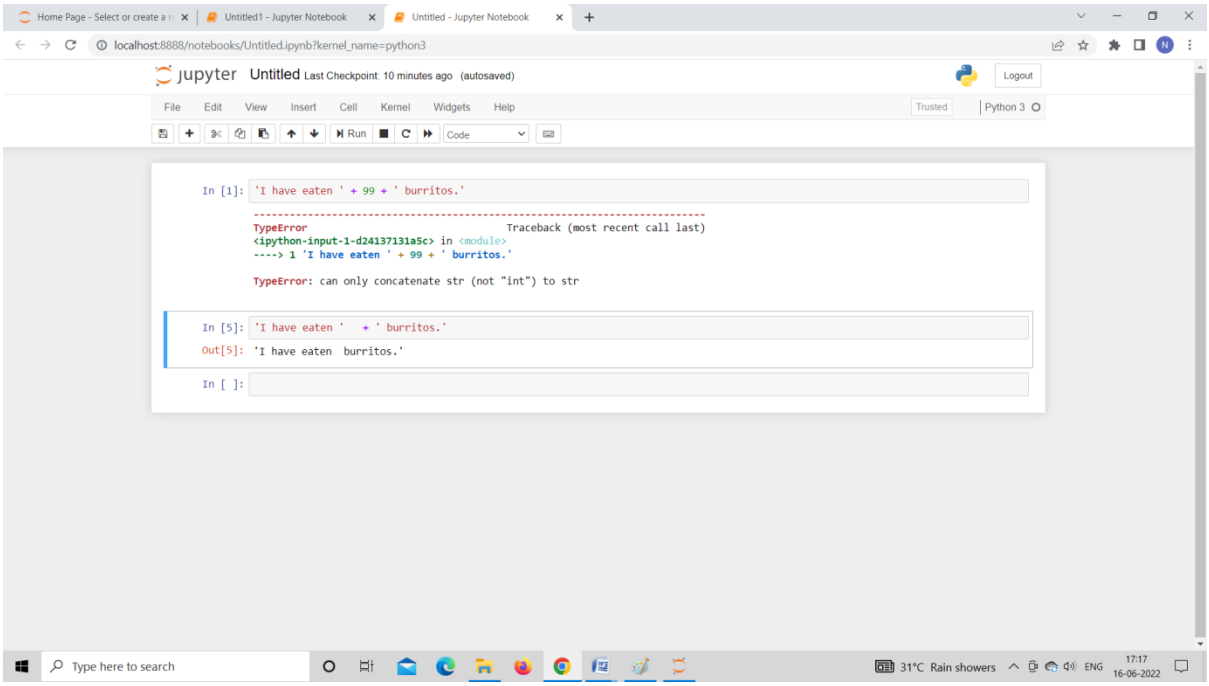
upper():Converts all lowercase characters in a string into uppercase.

title(): Converts the given string into a title case

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

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

Solution:



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

Results in type error type error occurs in python or type error is raised whenever an operation is performed on an incorrect/unsupported object type that is instead of + or + operation if you would use + and str will result in type error because operands are of different types

TypeError: can only concatenate str (not "int") to str

The above error has occurred because here we have used two different data types such as integer and string python can only convert or concatenate the two strings having same data type and to fix this error we need to remove an integer and one + operator if we don’t remove one + operator it will should bad operator which is again a type error.

After removing an integer and + operator: we will get

O/P: 'I have eaten burritos.'