Python Assignment

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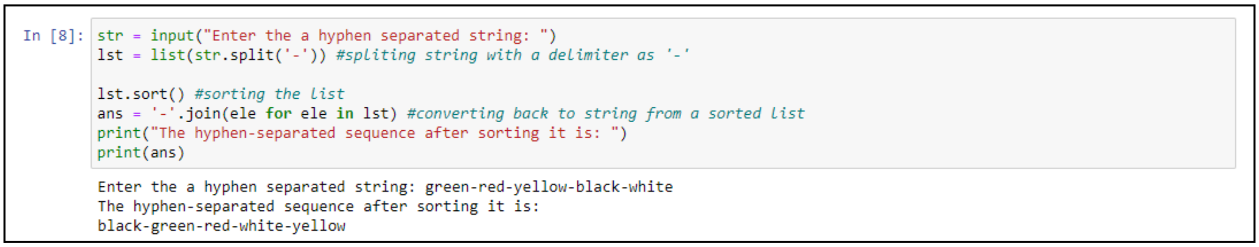
GSI GI 850

Q1. Write a Python program that accepts a hyphen-separated sequence of words as input and prints the words in a hyphen-separated sequence after sorting them alphabetically.

Code:

```
str = input("Enter the a hyphen separated string: ")
lst = list(str.split('-')) #spliting string with a delimiter as '-'

lst.sort() #sorting the list
ans = '-'.join(ele for ele in lst) #converting back to string from a sorted list

print("The hyphen-separated sequence after sorting it is: ")
print(ans)
```



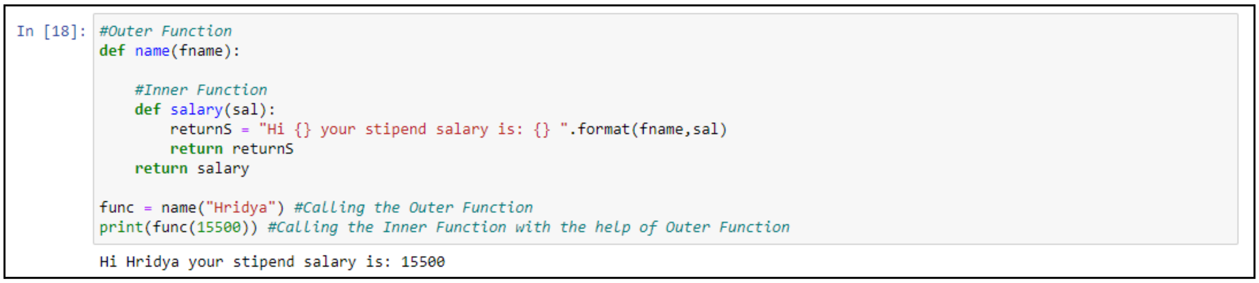
```
In [8]: str = input("Enter the a hyphen separated string: ")
        lst = list(str.split('-')) #spliting string with a delimiter as '-'

        lst.sort() #sorting the list
        ans = '-'.join(ele for ele in lst) #converting back to string from a sorted list
        print("The hyphen-separated sequence after sorting it is: ")
        print(ans)

        Enter the a hyphen separated string: green-red-yellow-black-white
        The hyphen-separated sequence after sorting it is:
        black-green-red-white-yellow
```

Q2. Write a Python program to access a function inside a function.

Code:

```
#Outer Function
def name(fname):

    #Inner Function
    def salary(sal):
        returnS = "Hi {} your stipend salary is: {} ".format(fname,sal)
        return returnS
    return salary
```

```
func = name("Hridya") #Calling the Outer Function
print(func(15500)) #Calling the Inner Function with the help of Outer Function
```

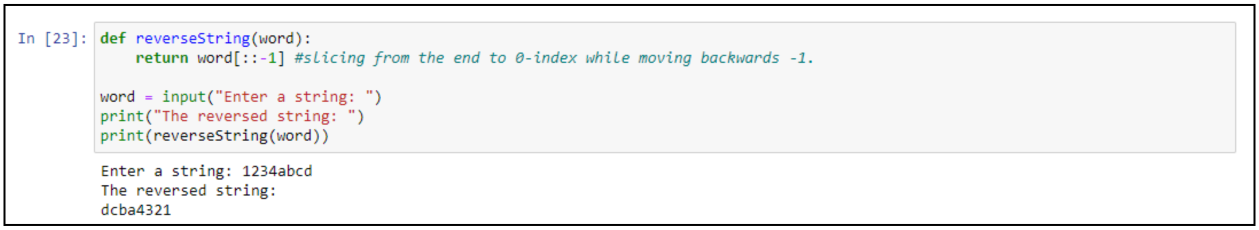


```
In [18]: #Outer Function
         def name(fname):
         
             #Inner Function
             def salary(sal):
                 returnS = "Hi {} your stipend salary is: {} ".format(fname,sal)
                 return returnS
             return salary
         
         func = name("Hridya") #Calling the Outer Function
         print(func(15500)) #Calling the Inner Function with the help of Outer Function

         Hi Hridya your stipend salary is: 15500
```

Q3. Write a Python program to reverse a string.

Code:

```
def reverseString(word):
        return word[::-1] #slicing from the end to 0-index while moving backwards -1.

word = input("Enter a string: ")
print("The reversed string: ")
print(reverseString(word))
```



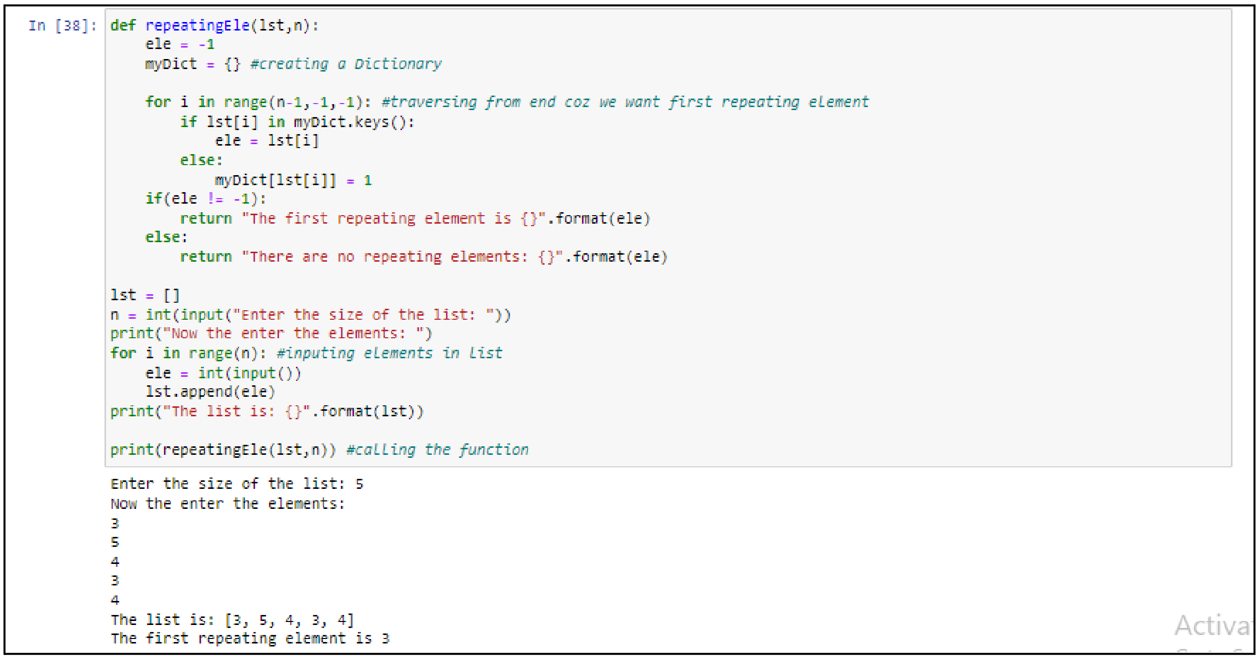
```
In [23]: def reverseString(word):
             return word[::-1] #slicing from the end to 0-index while moving backwards -1.
         
         word = input("Enter a string: ")
         print("The reversed string: ")
         print(reverseString(word))

         Enter a string: 1234abcd
         The reversed string: 
         dcba4321
```

Q4. Write a Python program to find the first duplicate element in a given array of integers. Return -1 If there are no such elements.

Code:

```
def repeatingEle(lst,n):
        ele = -1
        myDict = {} #creating a Dictionary
```

```
    for i in range(n-1,-1,-1): #traversing from end coz we want first repeating element

        if lst[i] in myDict.keys():
            ele = lst[i]
        else:
            myDict[lst[i]] = 1

    if(ele != -1):
        return "The first repeating element is {}".format(ele)
    else:
        return "There are no repeating elements: {}".format(ele)

lst = []
n = int(input("Enter the size of the list: "))
print("Now the enter the elements: ")
for i in range(n): #inputing elements in list
    ele = int(input())
    lst.append(ele)

print("The list is: {}".format(lst))
print(repeatingEle(lst,n)) #calling the function
```

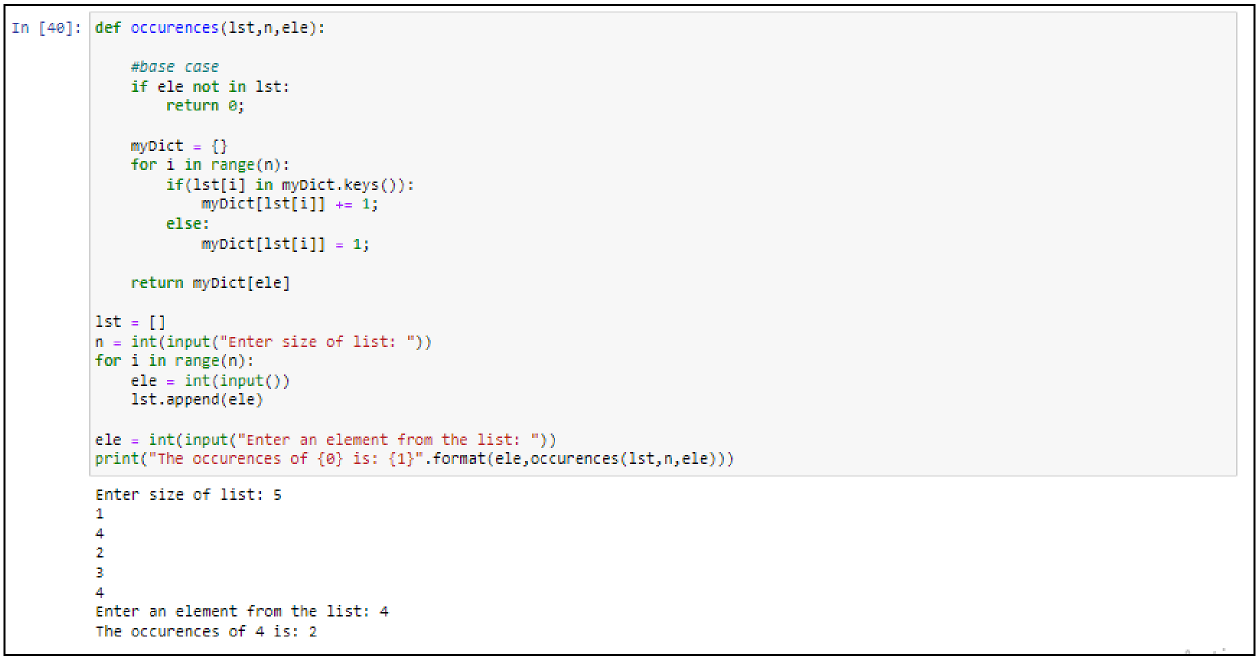


```
In [38]: def repeatingEle(lst,n):
             ele = -1
             myDict = {} #creating a Dictionary

             for i in range(n-1,-1,-1): #traversing from end coz we want first repeating element
                 if lst[i] in myDict.keys():
                     ele = lst[i]
                 else:
                     myDict[lst[i]] = 1
             if(ele != -1):
                 return "The first repeating element is {}".format(ele)
             else:
                 return "There are no repeating elements: {}".format(ele)

         lst = []
         n = int(input("Enter the size of the list: "))
         print("Now the enter the elements: ")
         for i in range(n): #inputing elements in list
             ele = int(input())
             lst.append(ele)
         print("The list is: {}".format(lst))

         print(repeatingEle(lst,n)) #calling the function

         Enter the size of the list: 5
         Now the enter the elements:
         3
         5
         4
         3
         4
         The list is: [3, 5, 4, 3, 4]
         The first repeating element is 3
```

Q5. Write a Python program to get the number of occurrences of a specified element in an array.

Code:

```
def occurences(lst,n,ele):

    #base case
    if ele not in lst:
        return 0;

     myDict = {}
    for i in range(n):
        if(lst[i] in myDict.keys()):
            myDict[lst[i]] += 1;
        else:
            myDict[lst[i]] = 1;

    return myDict[ele]

lst = []
n = int(input("Enter size of list: "))
for i in range(n):
    ele = int(input())
    lst.append(ele)

ele = int(input("Enter an element from the list: "))
print("The occurences of {0} is: {1}".format(ele,occurences(lst,n,ele)))
```

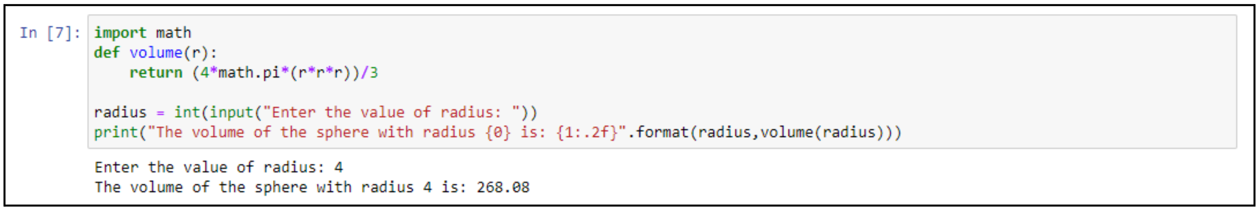


```
In [40]: def occurences(lst,n,ele):

             #base case
             if ele not in lst:
                 return 0;

             myDict = {}
             for i in range(n):
                 if(lst[i] in myDict.keys()):
                     myDict[lst[i]] += 1;
                 else:
                     myDict[lst[i]] = 1;

             return myDict[ele]

         lst = []
         n = int(input("Enter size of list: "))
         for i in range(n):
             ele = int(input())
             lst.append(ele)

         ele = int(input("Enter an element from the list: "))
         print("The occurences of {0} is: {1}".format(ele,occurences(lst,n,ele)))

         Enter size of list: 5
         1
         4
         2
         3
         4
         Enter an element from the list: 4
         The occurences of 4 is: 2
```

Q6. Write a function that computes the volume of a sphere given its radius.

Code:

```
        import math
        def volume(r):
                return (4*math.pi*(r*r*r))/3

        radius = int(input("Enter the value of radius: "))
        print("The volume of the sphere with radius {0} is:
{1:.2f}".format(radius,volume(radius)))
```

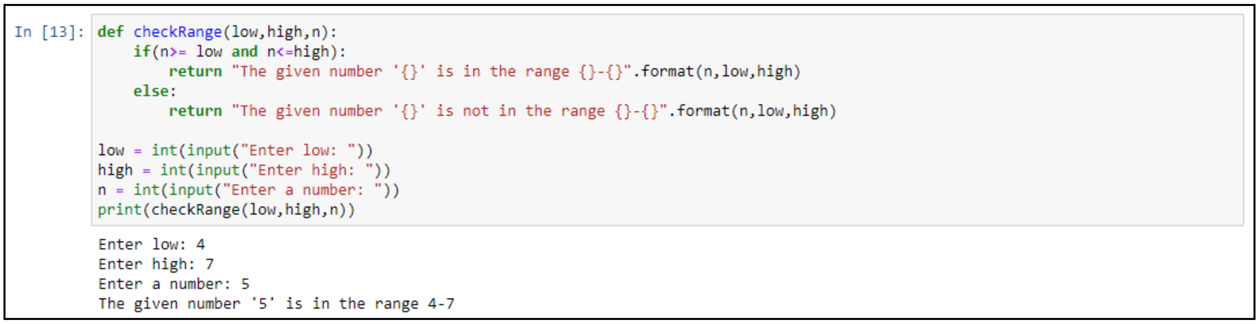


```
In [7]: import math
        def volume(r):
            return (4*math.pi*(r*r*r))/3

        radius = int(input("Enter the value of radius: "))
        print("The volume of the sphere with radius {0} is: {1:.2f}".format(radius,volume(radius)))

        Enter the value of radius: 4
        The volume of the sphere with radius 4 is: 268.08
```

Q7. Write a function that checks whether a number is in a given range (Inclusive of high and low).

Code:

```
def checkRange(low,high,n):
        if(n>= low and n<=high):
                return "The given number '{}' is in the range {}-{}".format(n,low,high)
        else:
                return "The given number '{}' is not in the range {}-{}".format(n,low,high)

low = int(input("Enter low: "))
high = int(input("Enter high: "))
n = int(input("Enter a number: "))
print(checkRange(low,high,n))
```



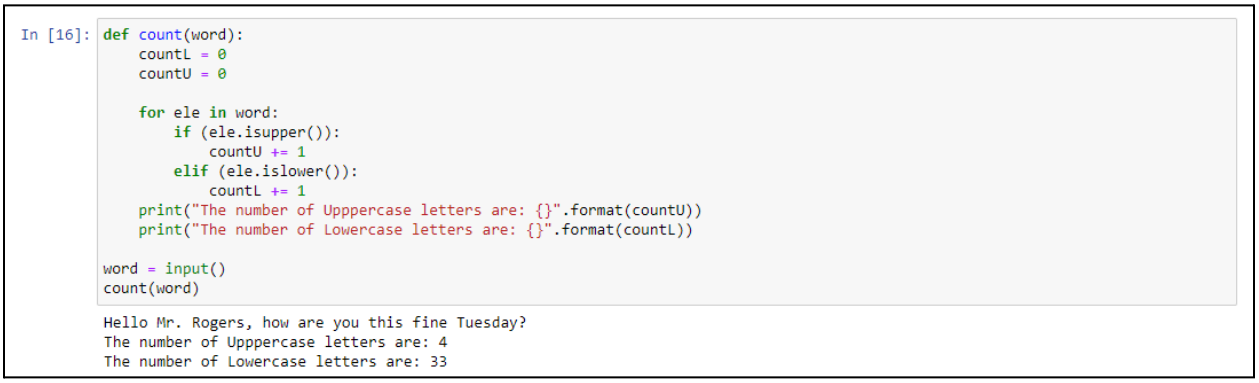
```
In [13]: def checkRange(low,high,n):
             if(n>= low and n<=high):
                 return "The given number '{}' is in the range {}-{}".format(n,low,high)
             else:
                 return "The given number '{}' is not in the range {}-{}".format(n,low,high)

         low = int(input("Enter low: "))
         high = int(input("Enter high: "))
         n = int(input("Enter a number: "))
         print(checkRange(low,high,n))

         Enter low: 4
         Enter high: 7
         Enter a number: 5
         The given number '5' is in the range 4-7
```

Q8. Write a Python function that accepts a string and calculate the number of uppercase letters and lowercase letters.

Code:

```
def count(word):
   countL = 0
   countU = 0

   for ele in word:
      if (ele.isupper()):
         countU += 1
      elif (ele.islower()):
         countL += 1;
   print("The number of Upppercase letters are: {}".format(countU))
   print("The number of Lowercase letters are: {}".format(countL))

word = input()
```

```
    count(word)
```

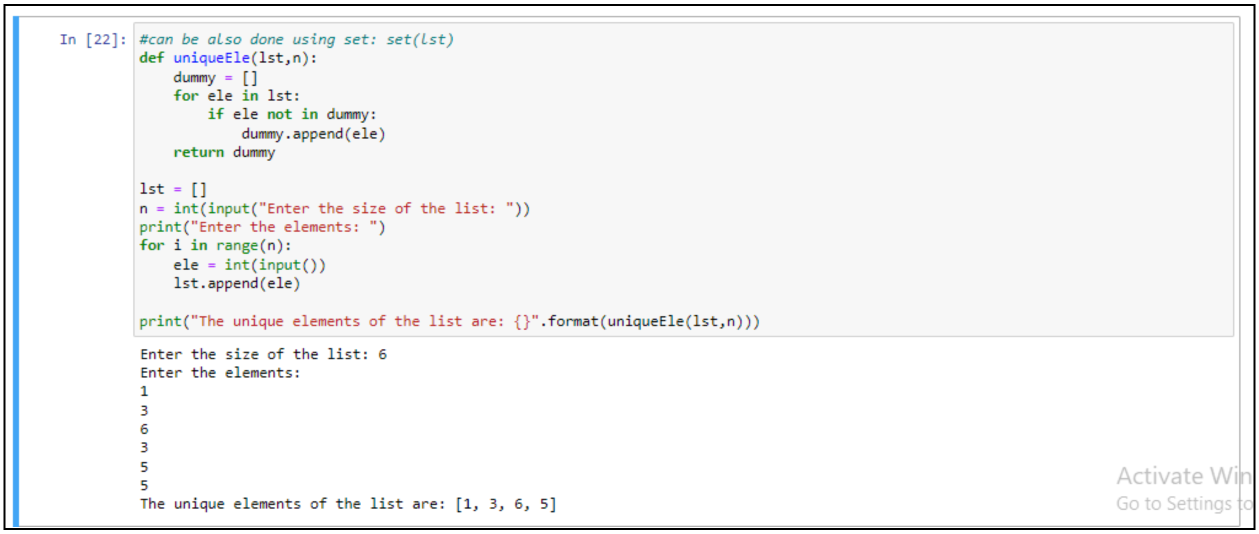


```
In [16]: def count(word):
             countL = 0
             countU = 0

             for ele in word:
                 if (ele.isupper()):
                     countU += 1
                 elif (ele.islower()):
                     countL += 1
             print("The number of Upppercase letters are: {}".format(countU))
             print("The number of Lowercase letters are: {}".format(countL))

         word = input()
         count(word)

         Hello Mr. Rogers, how are you this fine Tuesday?
         The number of Upppercase letters are: 4
         The number of Lowercase letters are: 33
```

Q9. Write a Python function that takes a list and returns a new list with unique elements of the first list.

Code:

```
    #can be also done using set: set(lst)
    def uniqueEle(lst,n):
        dummy = []
        for ele in lst:
            if ele not in dummy:
                dummy.append(ele)
        return dummy

    lst = []
    n = int(input("Enter the size of the list: "))
    print("Enter the elements: ")
    for i in range(n):
        ele = int(input())
        lst.append(ele)

    print("The unique elements of the list are: {}".format(uniqueEle(lst,n)))
```



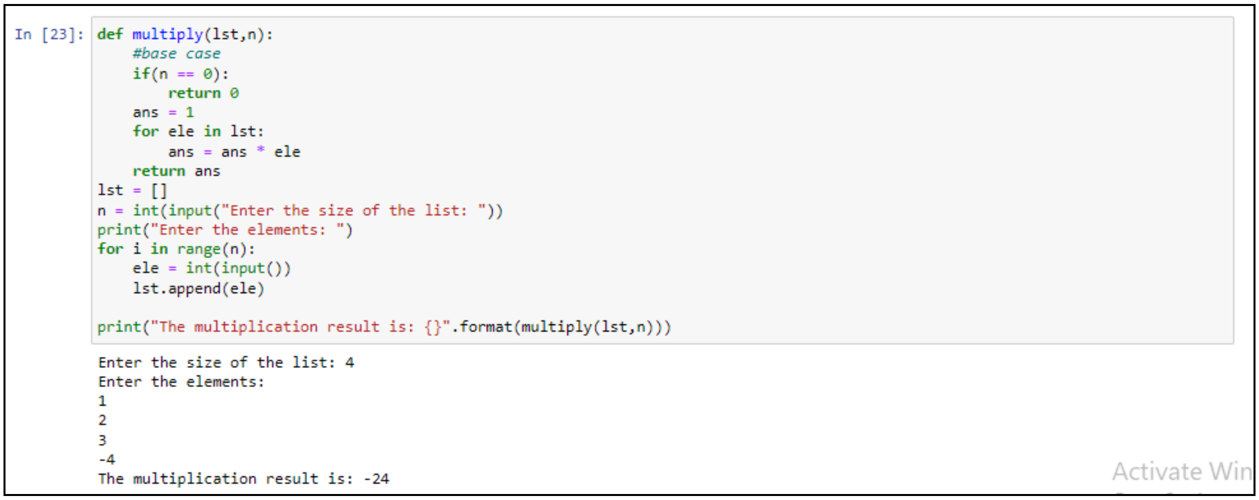
```
#can be also done using set: set(lst)
def uniqueEle(lst,n):
    dummy = []
    for ele in lst:
        if ele not in dummy:
            dummy.append(ele)
    return dummy

lst = []
n = int(input("Enter the size of the list: "))
print("Enter the elements: ")
for i in range(n):
    ele = int(input())
    lst.append(ele)

print("The unique elements of the list are: {}".format(uniqueEle(lst,n)))
```

```
Enter the size of the list: 6
Enter the elements:
1
3
6
3
5
5
The unique elements of the list are: [1, 3, 6, 5]
```

Q10. Write a Python function to multiply all the numbers in a list.

Code:

```
def multiply(lst,n):
    #base case
    if(n == 0):
        return 0
    ans = 1
    for ele in lst:
        ans = ans * ele
    return ans
lst = []
n = int(input("Enter the size of the list: "))
print("Enter the elements: ")
for i in range(n):
    ele = int(input())
    lst.append(ele)

print("The multiplication result is: {}".format(multiply(lst,n)))
```

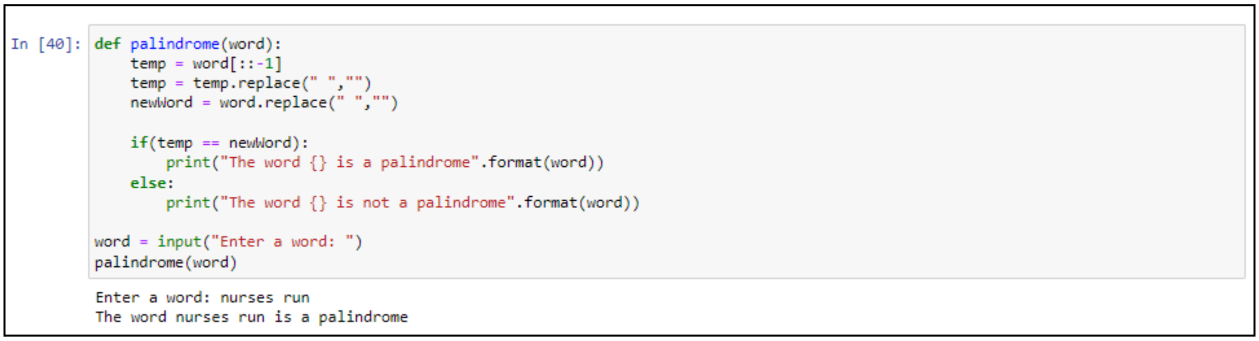


```
In [23]: def multiply(lst,n):
             #base case
             if(n == 0):
                 return 0
             ans = 1
             for ele in lst:
                 ans = ans * ele
             return ans
         lst = []
         n = int(input("Enter the size of the list: "))
         print("Enter the elements: ")
         for i in range(n):
             ele = int(input())
             lst.append(ele)

         print("The multiplication result is: {}".format(multiply(lst,n)))

         Enter the size of the list: 4
         Enter the elements:
         1
         2
         3
         -4
         The multiplication result is: -24
```

Q11. Write a Python function that checks whether a passed string is palindrome or not.

Code:

```
def palindrome(word):
    temp = word[::-1]
    temp = temp.replace(" ","")
    newWord = word.replace(" ","")

    if(temp == newWord):
        print("The word {} is a palindrome".format(word))
    else:
        print("The word {} is not a palindrome".format(word))

word = input("Enter a word: ")
palindrome(word)
```

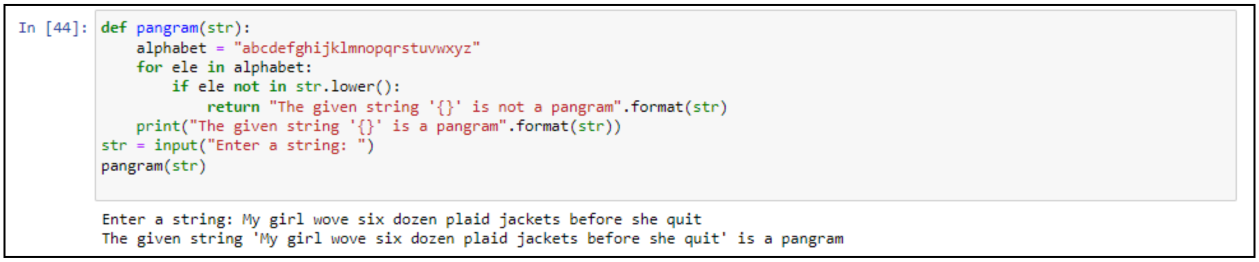


```
In [40]: def palindrome(word):
             temp = word[::-1]
             temp = temp.replace(" ","")
             newWord = word.replace(" ","")

             if(temp == newWord):
                 print("The word {} is a palindrome".format(word))
             else:
                 print("The word {} is not a palindrome".format(word))

         word = input("Enter a word: ")
         palindrome(word)

         Enter a word: nurses run
         The word nurses run is a palindrome
```

Q12. Write a Python function to check whether a string is a pangram or not.

Code:

```
def pangram(str):
    alphabet = "abcdefghijklmnopqrstuvwxyz"
    for ele in alphabet:
        if ele not in str.lower():
            return "The given string '{}' is not a pangram".format(str)
    print("The given string '{}' is a pangram".format(str))
str = input("Enter a string: ")
pangram(str)
```

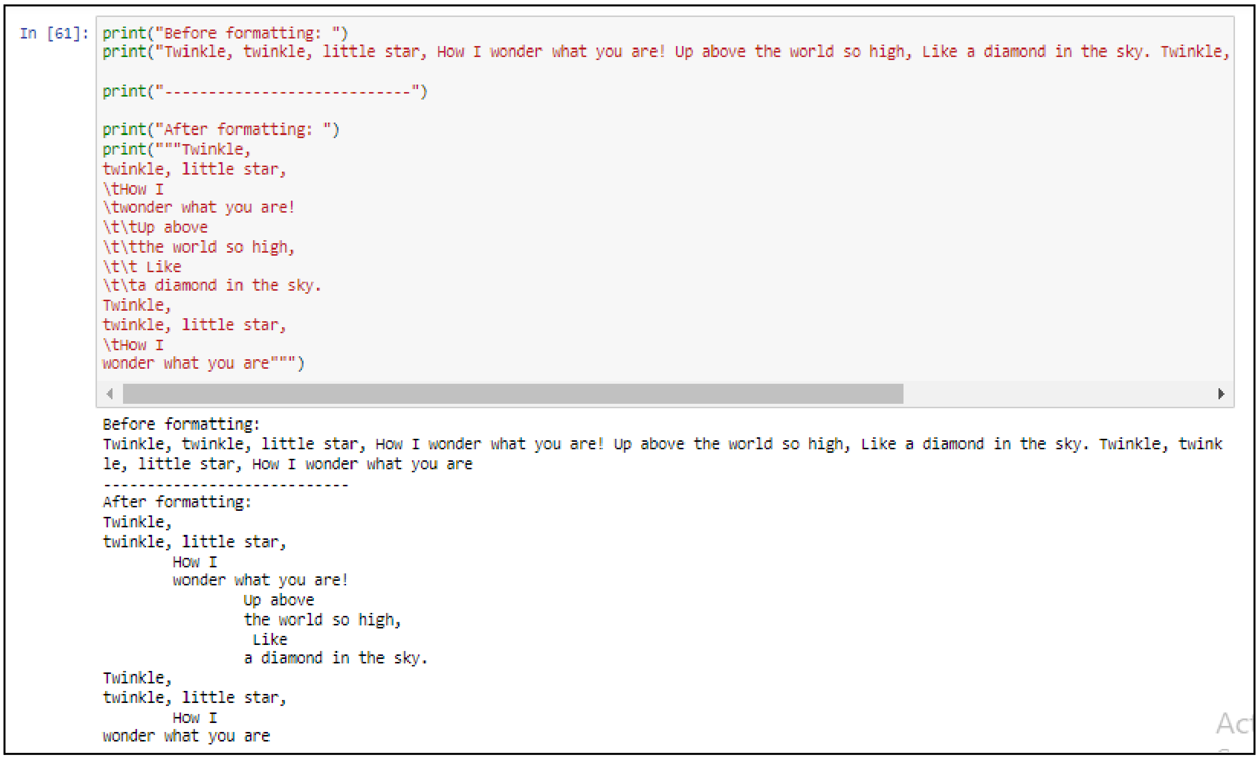


```
In [44]: def pangram(str):
             alphabet = "abcdefghijklmnopqrstuvwxyz"
             for ele in alphabet:
                 if ele not in str.lower():
                     return "The given string '{}' is not a pangram".format(str)
             print("The given string '{}' is a pangram".format(str))
         str = input("Enter a string: ")
         pangram(str)

         Enter a string: My girl wove six dozen plaid jackets before she quit
         The given string 'My girl wove six dozen plaid jackets before she quit' is a pangram
```

Q13. Write a Python program to print the following string in a specific format

Code:

```
print("Before formatting: ")
print("Twinkle, twinkle, little star, How I wonder what you are! Up above the world so high, Like a diamond in the sky. Twinkle, twinkle, little star, How I wonder what you are")

print("----------------------------")

print("After formatting: ")
print("""Twinkle,
twinkle, little star,
\tHow I
\twonder what you are!
\t\tUp above
\t\tthe world so high,
\t\t Like
\t\ta diamond in the sky.
Twinkle,
twinkle, little star,
\tHow I
wonder what you are""")
```



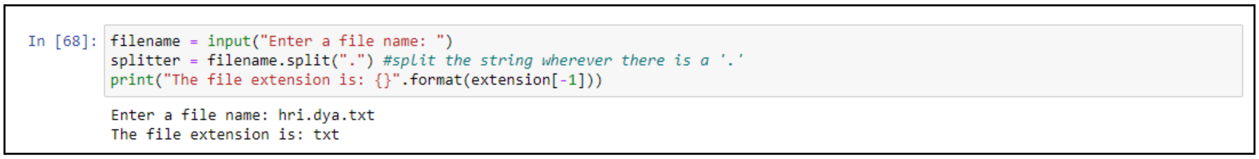
```
In [61]: print("Before formatting: ")
         print("Twinkle, twinkle, little star, How I wonder what you are! Up above the world so high, Like a diamond in the sky. Twinkle,

         print("---------------------------")

         print("After formatting: ")
         print("""Twinkle,
         twinkle, little star,
         \tHow I
         \twonder what you are!
         \t\tUp above
         \t\tthe world so high,
         \t\t Like
         \t\ta diamond in the sky.
         Twinkle,
         twinkle, little star,
         \tHow I
         wonder what you are""")
```

```
Before formatting:
Twinkle, twinkle, little star, How I wonder what you are! Up above the world so high, Like a diamond in the sky. Twinkle, twink
le, little star, How I wonder what you are
---------------------------
After formatting:
Twinkle,
twinkle, little star,
        How I
        wonder what you are!
                Up above
                the world so high,
                 Like
                a diamond in the sky.
Twinkle,
twinkle, little star,
        How I
wonder what you are
```

Q14. Write a Python program to accept a filename from the user and print the extension of that.

Code:

```
filename = input("Enter a file name: ")
splitter = filename.split(".") #split the string wherever there is a '.'
print("The file extension is: {}".format(extension[-1]))
```



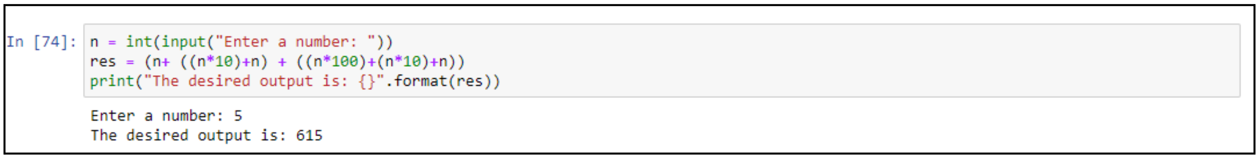
```
In [68]: filename = input("Enter a file name: ")
         splitter = filename.split(".") #split the string wherever there is a '.'
         print("The file extension is: {}".format(extension[-1]))
```

```
Enter a file name: hri.dya.txt
The file extension is: txt
```

Q15. Write a Python program that accepts an integer (n) and computes the value of n+nn+nnn.

Code:

```
n = int(input("Enter a number: "))
res = (n+ ((n*10)+n) + ((n*100)+(n*10)+n))
print("The desired output is: {}".format(res))
```

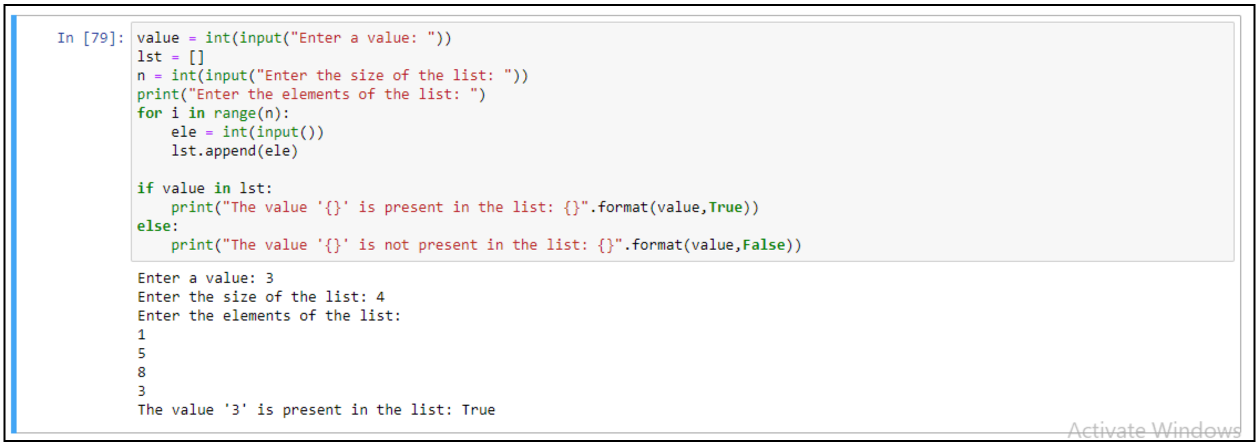


```
In [74]: n = int(input("Enter a number: "))
         res = (n+ ((n*10)+n) + ((n*100)+(n*10)+n))
         print("The desired output is: {}".format(res))

         Enter a number: 5
         The desired output is: 615
```

Q16. Write a Python program to check whether a specified value is contained in a group of values.

Code:

```
value = int(input("Enter a value: "))
lst = []
n = int(input("Enter the size of the list: "))
print("Enter the elements of the list: ")
for i in range(n):
   ele = int(input())
   lst.append(ele)

if value in lst:
   print("The value '{}' is present in the list: {}".format(value,True))
else:
   print("The value '{}' is not present in the list: {}".format(value,False))
```

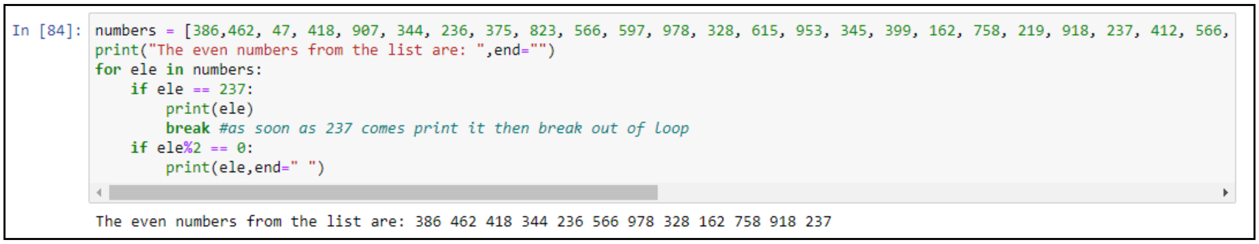


```
In [79]: value = int(input("Enter a value: "))
         lst = []
         n = int(input("Enter the size of the list: "))
         print("Enter the elements of the list: ")
         for i in range(n):
             ele = int(input())
             lst.append(ele)

         if value in lst:
             print("The value '{}' is present in the list: {}".format(value,True))
         else:
             print("The value '{}' is not present in the list: {}".format(value,False))

         Enter a value: 3
         Enter the size of the list: 4
         Enter the elements of the list:
         1
         5
         8
         3
         The value '3' is present in the list: True
```

Q17. Write a Python program to print all even numbers from a given numbers list in the same order and stop the printing if any numbers that come after 237 in the sequence.

Code:

```
numbers = [386,462, 47, 418, 907, 344, 236, 375, 823, 566, 597, 978, 328, 615,
953, 345, 399, 162, 758, 219, 918, 237, 412, 566, 826, 248, 866, 950, 626, 949,
687,217,815, 67, 104, 58, 512, 24,892, 894, 767, 553, 81, 379, 843, 831, 445, 742,
717,958,743, 527]

print("The even numbers from the list are: ",end="")
for ele in numbers:
   if ele == 237:
      print(ele)
      break #as soon as 237 comes print it then break out of loop
   if ele%2 == 0:
      print(ele,end=" ")
```

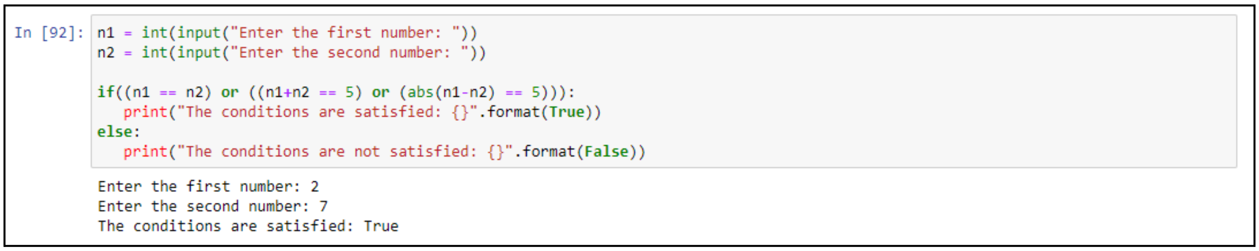


```
In [84]: numbers = [386,462, 47, 418, 907, 344, 236, 375, 823, 566, 597, 978, 328, 615, 953, 345, 399, 162, 758, 219, 918, 237, 412, 566,
         print("The even numbers from the list are: ",end="")
         for ele in numbers:
             if ele == 237:
                 print(ele)
                 break #as soon as 237 comes print it then break out of loop
             if ele%2 == 0:
                 print(ele,end=" ")

         The even numbers from the list are: 386 462 418 344 236 566 978 328 162 758 918 237
```

Q18. Write a Python program that will return true if the two given integer values are equal or their sum or difference is 5.

Code:

```
n1 = int(input("Enter the first number: "))
n2 = int(input("Enter the second number: "))

if((n1 == n2) or ((n1+n2 == 5) or (abs(n1-n2) == 5))):
  print("The conditions are satisfied: {}".format(True))
else:
  print("The conditions are not satisfied: {}".format(False))
```

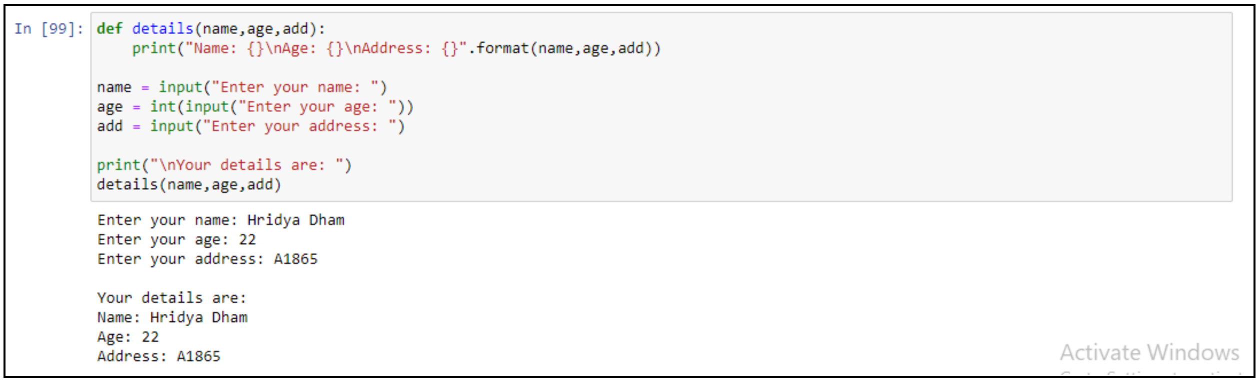


```
In [92]: n1 = int(input("Enter the first number: "))
         n2 = int(input("Enter the second number: "))

         if((n1 == n2) or ((n1+n2 == 5) or (abs(n1-n2) == 5))):
           print("The conditions are satisfied: {}".format(True))
         else:
           print("The conditions are not satisfied: {}".format(False))

         Enter the first number: 2
         Enter the second number: 7
         The conditions are satisfied: True
```

Q19. Write a Python program to display your details like name, age, address in three different lines.

Code:

```
def details(name,age,add):
   print("Name: {}\nAge: {}\nAddress: {}".format(name,age,add))

name = input("Enter your name: ")
age = int(input("Enter your age: "))
add = input("Enter your address: ")

print("\nYour details are: ")
details(name,age,add)
```

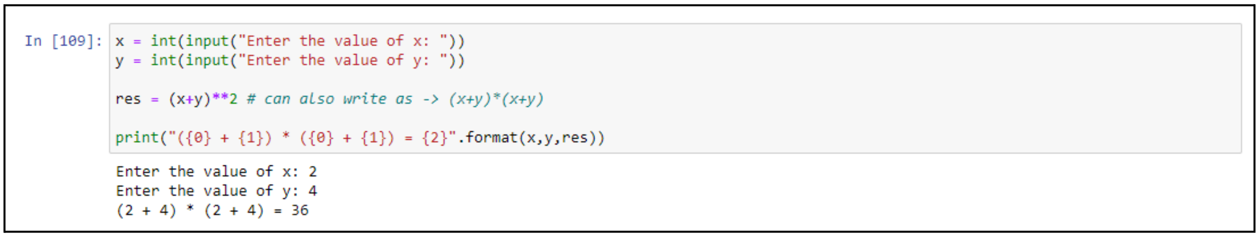


```
In [99]: def details(name,age,add):
             print("Name: {}\nAge: {}\nAddress: {}".format(name,age,add))

         name = input("Enter your name: ")
         age = int(input("Enter your age: "))
         add = input("Enter your address: ")

         print("\nYour details are: ")
         details(name,age,add)

         Enter your name: Hridya Dham
         Enter your age: 22
         Enter your address: A1865

         Your details are:
         Name: Hridya Dham
         Age: 22
         Address: A1865
```

Q20. Write a Python program to solve (x + y) * (x + y).

Code:

```
x = int(input("Enter the value of x: "))
y = int(input("Enter the value of y: "))

res = (x+y)**2 # can also write as -> (x+y)*(x+y)

print("({0} + {1}) * ({0} + {1}) = {2}".format(x,y,res))
```



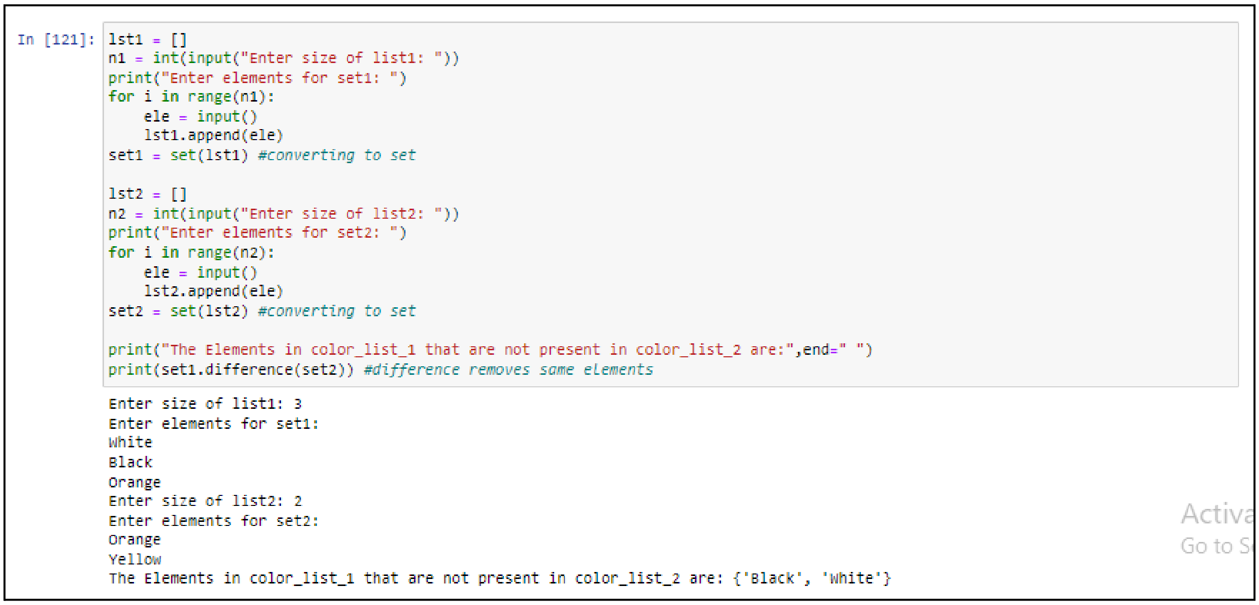
```
In [109]: x = int(input("Enter the value of x: "))
          y = int(input("Enter the value of y: "))

          res = (x+y)**2 # can also write as -> (x+y)*(x+y)

          print("({0} + {1}) * ({0} + {1}) = {2}".format(x,y,res))

          Enter the value of x: 2
          Enter the value of y: 4
          (2 + 4) * (2 + 4) = 36
```

Q21. Write a Python program to print out a set containing all the colors from color_list_1 which are not present in color_list_2.

Code:

```
lst1 = []
n1 = int(input("Enter size of list1: "))
print("Enter elements for set1: ")
for i in range(n1):
    ele = input()
    lst1.append(ele)
```

```
set1 = set(lst1) #converting to set

lst2 = []
n2 = int(input("Enter size of list2: "))
print("Enter elements for set2: ")
for i in range(n2):
    ele = input()
    lst2.append(ele)
set2 = set(lst2) #converting to set

print("The Elements in color_list_1 that are not present in color_list_2 are:",end=" ")
print(set1.difference(set2)) #difference removes same elements
```



```
In [121]: lst1 = []
          n1 = int(input("Enter size of list1: "))
          print("Enter elements for set1: ")
          for i in range(n1):
              ele = input()
              lst1.append(ele)
          set1 = set(lst1) #converting to set

          lst2 = []
          n2 = int(input("Enter size of list2: "))
          print("Enter elements for set2: ")
          for i in range(n2):
              ele = input()
              lst2.append(ele)
          set2 = set(lst2) #converting to set

          print("The Elements in color_list_1 that are not present in color_list_2 are:",end=" ")
          print(set1.difference(set2)) #difference removes same elements

          Enter size of list1: 3
          Enter elements for set1:
          White
          Black
          Orange
          Enter size of list2: 2
          Enter elements for set2:
          Orange
          Yellow
          The Elements in color_list_1 that are not present in color_list_2 are: {'Black', 'White'}
```