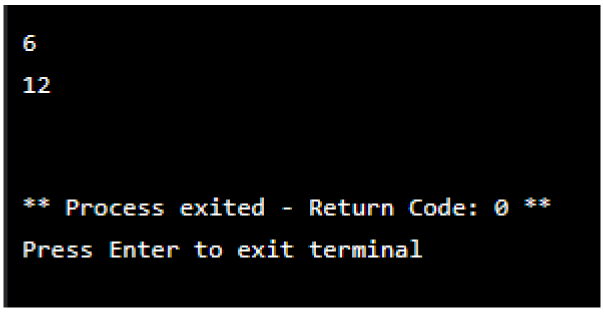
1 . Container With Most Water

You are given an integer array height of length n. There are n vertical lines drawn such that the two endpoints of the ith line are (i, 0) and (i, height[i]). Find two lines that together with the x axis form a container, such that the container contains the most water. Return the maximum amount of water a container can store. Notice that you may not slant the container

CODE
:

```
def maxArea(A, Len) :
        area = 0 for i in
        range(Len) :
                for j in range(i + 1, Len) :
                      # Calculating the max area area =
                      max(area, min(A[j], A[i]) * (j - i))
          return area
# Driver code a=
[1,5,4,3] b=
[3,1,2,4,5]
len1 = len(a)
print(maxArea(a, len1))
len2 = len(b)
print(maxArea(b, len2))
```

OUTPUT :



```
6
12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Press Enter to exit terminal
```
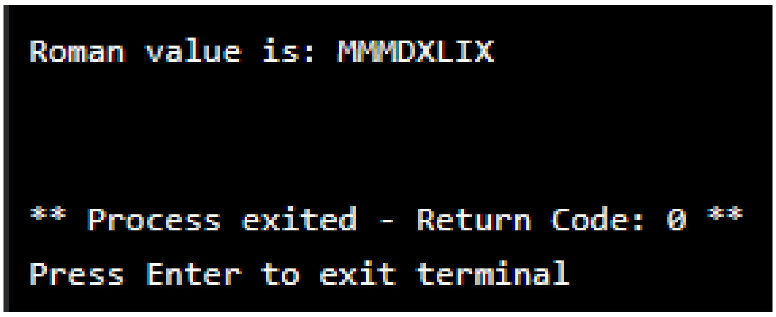

2 . Integer to Roman CODE :

```
def printRoman(number):
    num = [1, 4, 5, 9, 10, 40, 50, 90,100, 400, 500, 900, 1000]
   sym = ["I", "IV", "V", "IX", "X", "XL", "L", "XC", "C",
    "CD", "D", "CM", "M"] i=12
```

```
        while number:
            div = number // num[i]
            number %= num[i]
        while div:
            print(sym[i], end = "") div -= 1
             i-=1
        # Driver code if __name__ == "__main__":
      number = 3549 print("Roman value is:", end = " ")
      printRoman(number)
```

OUTPUT :

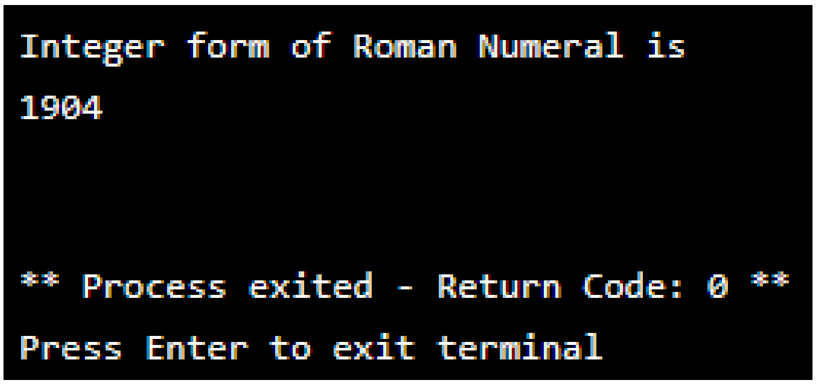


```
Roman value is: MMMDXLIX


** Process exited - Return Code: 0 **
Press Enter to exit terminal
```

3 . Roman to Integer CODE :

```
def value(r):
if (r == 'I'):
  return 1
if (r == 'V'):
  return 5
if (r == 'X'):
  return 10
if (r == 'L'):
   return 50
if (r == 'C'):
   return 100
if (r == 'D'):
   return 500
if (r == 'M'):
  return 1000
return -1
def romanToDecimal(str):
  res = 0 i=0
 while (i < len(str)):
```

```
          s1 = value(str[i])
        if (i + 1 < len(str)):
          s2 = value(str[i + 1])
          if (s1 >= s2):
           res = res + s1 i=i+1
          else:
          res = res + s2 - s1 i=i+2
          else:
          res = res + s1 i=i+1
          return res

     # Driver code print("Integer form of
     Roman Numeral is"),
     print(romanToDecimal("MCMIV"))
     OUTPUT :
```



```
Integer form of Roman Numeral is
1904


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```

4 . Longest Common Prefix CODE :

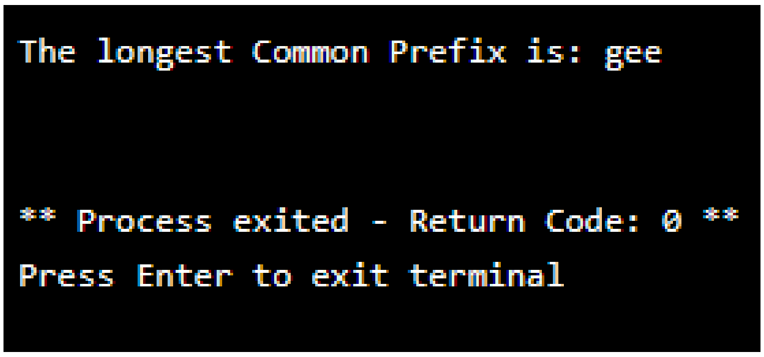
```
def longestCommonPrefix( a):
 size = len(a)
 if (size == 0):
    return ""
 if (size == 1):
     return a[0]

a.sort() end = min(len(a[0]), len(a[size - 1]))
i=0
while (i < end and
     a[0][i] == a[size - 1][i]): i+=1


pre = a[0][0: i]
return pre
# Driver Code
```

```
if __name__ == "__main__":
   input = ["geeksforgeeks",
   "geeks","geek", "geezer"] print("The
   longest Common Prefix is :" ,
   longestCommonPrefix(input))
```

OUTPUT :



```
The longest Common Prefix is: gee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Press Enter to exit terminal
```

5 . 3Sum CODE :

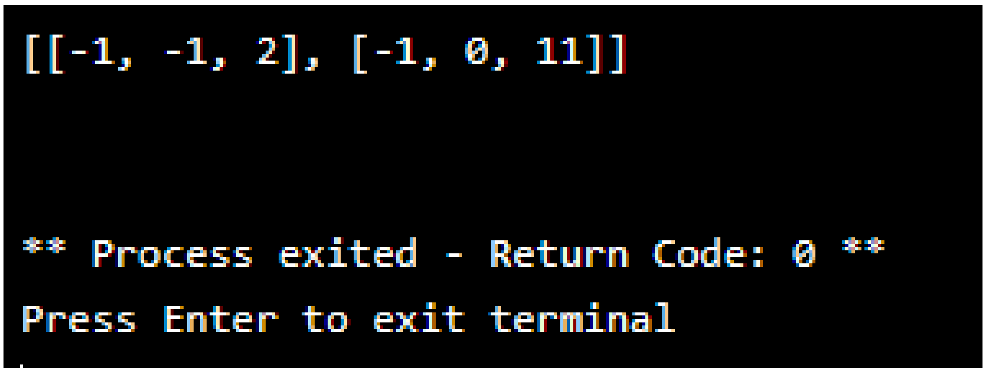
```
class Solution(object):
def threeSum(self, nums):
nums.sort() result = [] for i in
 range(len(nums)-2): if i> 0 and
 nums[i] == nums[i-1]:
 continue
 l = i+1
 r = len(nums)-1
              while(l<r
              ): sum = nums[i] + nums[l] +
                nums[r] if sum<0:
                  l+=
                el1if sum
                >0r-:
                el=se1
                : result.append([nums[i],nums[l],nums[r]]) while
                  l<len(nums)-1 and nums[l] == nums[l + 1] : l += 1
                  while r>0 and nums[r] == nums[r - 1]: r -= 1 l+=1
                  r-=1
```

return

ob1re=sSulotlution()

print(ob1.threeSum([-1,0,1,2,-1

,-4])) OUTPUT :



```
[[-1, -1, 2], [-1, 0, 11]]


** Process exited - Return Code: 0 **
Press Enter to exit terminal
```

6 . 3Sum

Closest CODE :

import sys def

solution(arr, x):

closestSum =

sys.maxsize for i in

range (floern(jainrr)r)a:nge(i + 1,

len(arr)f)o:r k in range(j + 1, len(

arr)): if(abs(x - closestSum)

> abs(x - (arr[i] +

OUTPUxT))

:

arr[j] +

arr[k])))c:losestSum =

(arr[i] +arr[j] + arr[k

return

closestSum

# Driver code if

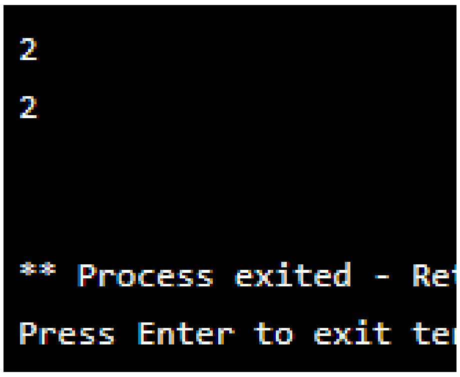
__name__ ==

"__main__":

arr = [-1, 2, 1, -4]

x=1

print(solution(arr,



```
2
2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Press Enter to exit te
```

7 . Letter Combinations of

a Phone Number CODE :

def

letterCombinationsUtil(number,

        n, table): list = [] q =

        deque()

        q.append("

        ")

        while len(q) !=

        0: s = q.pop()

                if len(s) ==

                n: list.append(

        else   table[nqu.ma
        :
                            pbpeern[lden

                            (s(s+)]]:

        return   letter)
        list
        s)

        for letter in

def letterCombinations(number,

n):

    # table[i] stores all characters that

    # corresponds to ith digit in phone

    table = ["0", "1", "abc", "def",

    "ghi", "jkl", "mno", "pqrs", "tuv",

            "wxyz"]

    list = letterCombinationsUtil(number, n,

    table) s="" for word in list:

        s+=word+""

    print(

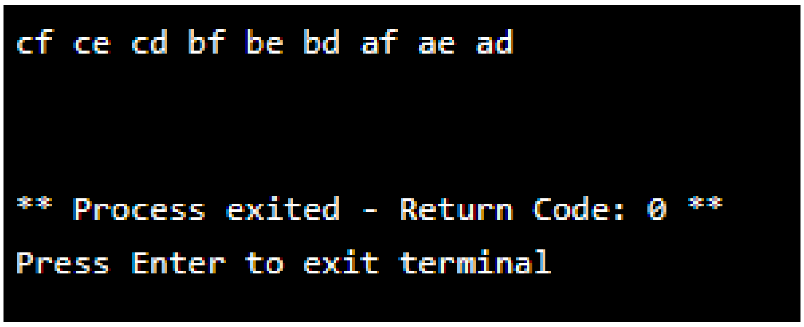
    s)

# Driverrectuordne number = [2,

3] n = len(number)

letterCombinations(number

,n) OUTPUT :



```
cf ce cd bf be bd af ae ad



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Press Enter to exit terminal
```

8 . 4Sum

CODE : class

pairSum:

  def

  __init__s(eslfe.filfr)s: t =

      ""

       self.se

       c = ""

```
        self.sum =
def noC""ommon(a,
b):if (a.first == b.first or a.first == b.sec or a.sec
  == b.first or a.sec == b.srectu):rn
returFnTalrsuee def
findFourElements(myArr, sum):
 length =
 lesni(zmey=Ar(r()length * (length - 1)) //
  2) aux = [None for _ in
  range(size)] k=0 for i in
  range(length - 1):
    for j in range(i + 1,
    lenagutxh[)k:] = pairSum()
      aux[k].sum = myArr[i] +
      myArr[j] aux[k].first = i
      aux[k].sec = j k+=1

  aux.sort(key=lambda x:
  x.sum) i=0 j=size-1 while (i <
  size and j >= 0):

    if ((aux[i].sum + aux[j].sum ==
    sum)and noCommon(aux[i],
      prianut(xm[jy])A):rr[aux[i].first],
      myAmrry[Aaurrx[a[iu].xs[ej]c.]fi,rst], myArr[aux[j].sec],
      retusrep=", ")
      n
    elif (aux[i].sum + aux[j].sum <
    suim+=):1
    else
```

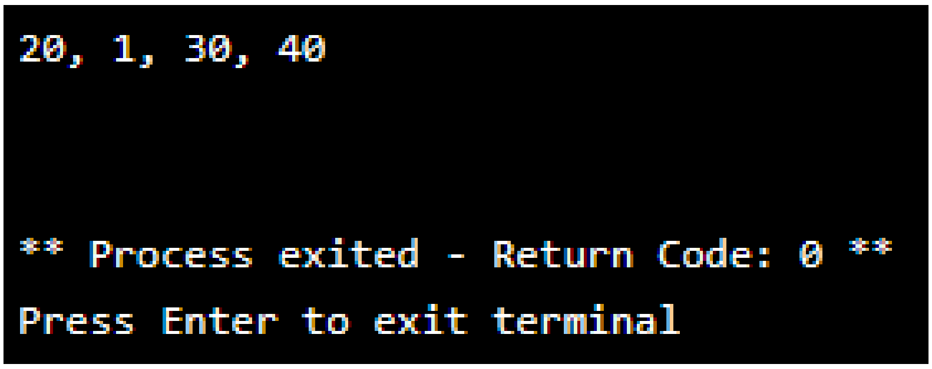
: j-=1
# Driver Code arr =

[10, 20, 30, 40, 1, 2]

X=91

findFourElements(arr,

X) OUTPUT :



```
20, 1, 30, 40



** Process exited - Return Code: 0 **
Press Enter to exit terminal
```

9 . Remove Nth Node From End of

List CODE : class Node:

```
  def __init__(self,
  vaslueelf).:data =
    value self.next
    = None
def length(head):
temp = head count =
0 while(temp !=
None):
    count += 1 temp
    = temp.next
  return
  count
def
pripnttrL=isth(heeaadd):
  while(ptr !=
  Nopnrein)t: (ptr.data, end ="
```

```
    ") ptr = ptr.next
  print(
  )
def
deleteNthNodeFromEnd(
head, n):Length =
length(head)
  nodeFromBeginning =
  Length - n + 1 prev =
  None temp = head for i in
  range(1,
  nodeFromBeginning):

    prev = temp
    temp =
  if(pteremvp=.n=ext
  Nohneea)d: =
    head.next return
  elsheead
  : prev.next =
    prev.next.next return
    head
if __name__ ==
'__hmeadin__=':   Node(1)
  head.next    =    Node(2)
  head.next.next            =
  Node(3)
  head.next.next.next      =
  Node(4)
```

head.next.next.next.next

= Node(5) print("Linked

List before Deletion:")

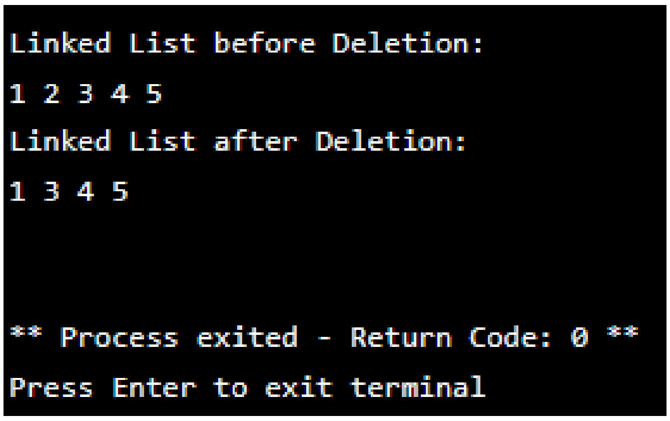
printList(head)

head =
deleteNthNodeFromEnd(he
ad, 4)

print("Linked List after

Deletion:") printList(head)

OUTPUT



```
Linked List before Deletion:
1 2 3 4 5
Linked List after Deletion:
1 3 4 5


** Process exited - Return Code: 0 **
Press Enter to exit terminal
```

:

10 . Valid

Parentheses

open_list = ["[","{","

("] close_list =

["]","}",")"] def
        stack = []

check(myStr):
        for i in

        myStr:if i in

                open_lsistat:ck.append(

                elif i ini)

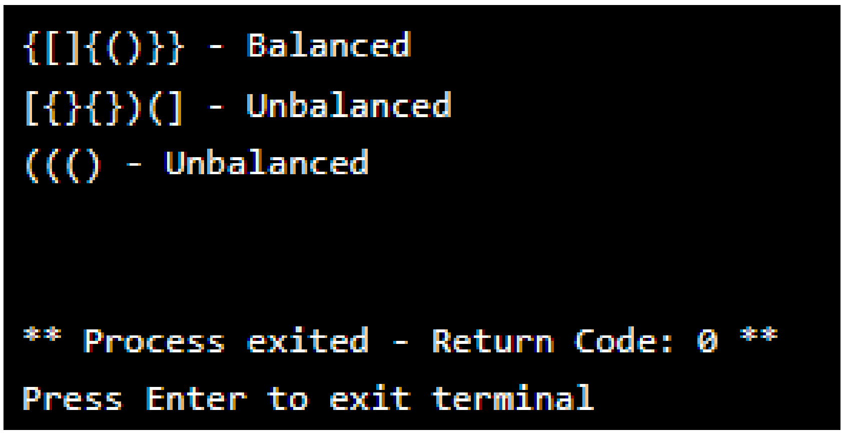
                close_lpisots: =

                        close_list.index(i) if

                        ((len(st(aocpke)n>_l0is)ta[pnods] ==

```
                    stack[len(stack)-1])): stack.pop()
                      else
                                          :     n
                                          retur
        if len(stack) ==
        "Unbalanced" 0: return
        else :    "Unbala
        "Balanc nced"
        ed"
        return

    # Driver code string
    = "{[] {()}}"
    print(string,"-
    ",check(string))
    string = "[{}{})(]"
    print(string,"-
    ",check(string)) string = "
    ((()" print(string,"-
    ",check(string)) OUTPUT :
```



```
{[]{()}} - Balanced
[{}{})(] - Unbalanced
((() - Unbalanced


** Process exited - Return Code: 0 **
Press Enter to exit terminal
```