#TASK 1

class KeyIndex:

def \_\_init\_\_(self,a):

self.x=0

self.a=a

#max, min

min=0

max=a[0]

for i in range(0,len(a)):

if a[i]>max:

max=a[i]

elif a[i]<min:

min=a[i]

if min>=0:

self.x=0

else:

self.x=min\*(-1)

#initializing oxylary array

self.k=[0]\*(self.x+max+1)

for i in range(len(a)):

self.k[a[i]+self.x]+=1

print("Oxylary Array:",self.k)

def search(self, val):

if val<0 :

if val+self.x<0:

flag=False

else:

flag=True

else:

if val+self.x>=len(self.k):

flag=False

else:

flag=True

if flag==True:

new=self.k[val+self.x]

if new!=0:

print("Search Result:",val,'is in this array')

else:

flag=False

else:

print("Search Result:",val,'is not present in this array')

def sort(self):

#initialize new array

sum=0

for i in range(len(self.k)):

if self.k[i]!=0:

sum+=self.k[i]

sort=[0]\*(sum)

c=0

i=0

while c!=len(self.k):

if self.k[c]!=0:

sort[i]=c-self.x

self.k[c]-=1

i+=1

else:

c+=1

print("Sorted array:",sort)

a=[4,2,-3,7,6,7,2,5,7]

j=KeyIndex(a)

j.search(7)

j.sort()

#TASK 2

def hashtable(array):

hash\_table=[0]\*9

i=0

while i<len(array):

sum\_dig=0

con=0

j=0

store=array[i]

while j<len(store):

if store[j] not in "AEIOU":

con+=1 #consonant

if ord(array[i][j])<=57 and ord( array[i][j])>=48:

sum\_dig+=int( array[i][j]) #numbers

j+=1

i+=1

func= (con\*24+ sum\_dig)%9

if hash\_table[func]==0:

hash\_table[func]=store

else:

while hash\_table[func]!=0:

func=(func+1)%9

hash\_table[func]=store

return hash\_table

arr=['ARB123', 'XYZ578', 'B3AR12', 'UV59WXYZ74', 'E2C54', 'VXGT418', "ST1E89B8A32", 'Q4SR56', 'ER240']

print(hashtable(arr))