#task-1

class keyindex:

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

max\_num=0

for i in ary:

if i > max\_num:

max\_num = i

self.min\_num = 0

for i in ary:

if i < self.min\_num:

self.min\_num = i

self.min\_num = self.min\_num\*-1

self.aux\_array = [0]\*(self.min\_num+max\_num+1)

for i in ary:

i += self.min\_num

if self.aux\_array[i] == 0:

self.aux\_array[i] = 1

else:

self.aux\_array[i] += 1

def search(self,element):

element += self.min\_num

if element < len(self.aux\_array) and self.aux\_array[element] != 0:

print(True)

else:

print(False)

def sort(self):

new\_array = [None]\*20

idx=0

element=0

for i in self.aux\_array:

if i != 0:

for k in range(0,i):

minus = element-self.min\_num

new\_array[idx] = minus

idx+=1

element += 1

print(new\_array)

arr = [-2,3,-4,5,2,1,6,6,7,-8,8,8]

obj1 = keyindex(arr)

obj1.search(1000)

obj1.sort()

#task-2

class hashtable:

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

self.hash\_array = [0]\*9

def add\_hashtable(self,word):

constant = 0

sum\_digit = 0

for i in word:

if ord(i) >= 65 and ord(i) <= 90:

if ord(i) != 65 and ord(i) != 69 and ord(i) != 73 and ord(i) != 79 and ord(i) != 85:

constant += 1

elif ord(i) >= 48 and ord(i) <= 57:

sum\_digit += int(i)

total = ((constant\*24)+sum\_digit)%9

if self.hash\_array[total] == 0:

self.hash\_array[total] = word

else:

for i in range(0,len(self.hash\_array)):

if self.hash\_array[i] == 0:

self.hash\_array[i] = word

break

def print\_hashtable(self):

print(self.hash\_array)

obj = hashtable()

obj.add\_hashtable('ST1E89B8A32')

obj.add\_hashtable('ST1E89B8A31')

obj.add\_hashtable('ST1E89B8A33')

obj.add\_hashtable('ST1E89B8A34')

obj.add\_hashtable('ST1E89B8A35')

obj.add\_hashtable('ST1E89B8A36')

obj.add\_hashtable('ST1E89B8A37')

obj.add\_hashtable('ST1E89B8A38')

obj.add\_hashtable('ST1E89B8A39')

obj.add\_hashtable('ST1E89B8A29')

obj.add\_hashtable('ST1E89B8A28')

obj.add\_hashtable('ST1E89B8A27')

obj.print\_hashtable()