import numpy as np

MOD = 100

NULLVALUE = -32768

def hash(value):

return key % MOD

def insert\_hash(hash\_table, value):

add = hash(value)

if hash\_table[add] != NULLVALUE:

print(‘key conflict’)

return

hash\_table[add] = value

def search\_hash(hash\_table, value):

add = hash(value)

if hash\_table[add] == NULLVALUE:

print(‘value %d not found’ % value)

return add

# data = np.array([3, -1, -6, 5, 2, -4, 8, 11, 13])

data = np.array([3, 5, 2, 8, 11, 13, 4])

sum = 7

# pos\_hash\_table = np.ones((1, 100)) \* NULLKEY

pos\_hash\_table = np.ones(100) \* NULLKEY

proper\_pairs = [ ]

for idata in data:

factor\_another = sum – idata

add = hash(factor\_another)

if pos\_hash\_table[add] != NULLKEY:

proper\_pairs.append([idata, factor\_another])

else:

insert\_hash(pos\_hash\_table, idata)

print(proper\_pairs)