#Name: Teena Hirekerur

#Rollno:COBC42

#Assignmentno: DAA-2

import heapq

class Node:

def \_\_init\_\_(self, freq, symbol, left=None, right=None):

self.freq, self.symbol, self.left, self.right = freq, symbol, left, right

def \_\_lt\_\_(self, other): return self.freq < other.freq

def print\_codes(self, code=''):

if self.symbol: print(f"{self.symbol} -> {code}")

if self.left: self.left.print\_codes(code + '0')

if self.right: self.right.print\_codes(code + '1')

chars = ['a', 'b', 'c', 'd', 'e', 'f']

freq = [5, 9, 12, 13, 16, 45]

nodes = [Node(f, c) for f, c in zip(freq, chars)]

heapq.heapify(nodes)

while len(nodes) > 1:

heapq.heappush(nodes, Node(nodes[0].freq + nodes[1].freq, '', heapq.heappop(nodes), heapq.heappop(nodes)))

nodes[0].print\_codes()

f -> 0

c -> 100

d -> 101

a -> 1100

b -> 1101

e -> 111