import networkx as nx

import matplotlib.pyplot as plt

import numpy as np

from itertools import combinations

import time

n = 30

G=nx.erdos\_renyi\_graph(n,0.25)

nx.draw\_networkx(G, with\_labels=True)

plt.show()

vertices = G.nodes()

adj\_matrix = nx.to\_numpy\_matrix(G, dtype=int)

k = 5

clique = list(combinations(vertices, k))

def separate(T,i):

Tplus = [nodes for nodes in T if i in nodes]

Tminus = [nodes for nodes in T if i not in nodes]

return Tplus, Tminus

def merge(T1, T2):

T\_merge = T1 + T2

return T\_merge

def find\_k\_clique(T, n):

for i in range(0, n-1):

for j in range(i+1, n):

T\_plus, T\_minus = separate(T, i)

T\_plus\_plus, T\_plus\_minus = separate(T\_plus, j)

T = merge(T\_minus, T\_plus\_minus)

if adj\_matrix[i, j]:

T = merge(T, T\_plus\_plus)

return T

start = time.time()

clique = find\_k\_clique(clique, n)

end = time.time()

print(clique)

print(end-start)