import networkx as nx

import matplotlib.pyplot as plt

import itertools as it

def brute(g):

nodes=g.nodes()

n=len(g)

first=list()

second=list()

for i in range(1,n/2+1):

first.extend(it.combinations(nodes,i))

for j in range(len(first)):

second.append(tuple(set(nodes)-set(first[j])))

intra=list()

inter1=list()

inter2=list()

for i in range(len(first)):

data=nx.subgraph(g,first[i])

inter1.append(data.number\_of\_edges())

for i in range(len(second)):

data=nx.subgraph(g,second[i])

inter2.append(data.number\_of\_edges())

for i in range(len(first)):

intra.append(g.number\_of\_edges()-inter1[i]-inter2[i])

ratio=list()

for i in range(len(first)):

ratio.append((inter1[i]+inter2[i])/intra[i])

index=max(ratio)

index=ratio.index(index)

print "The first community is :", first[index]

print "The second community is :",second[index]

g=nx.gnp\_random\_graph(10,0.35)

nx.draw(g,with\_labels=1)

plt.show()

brute(g)