LAB 9

9:

#1

def p(g):

n = len(g)

s = [False] \* n

d = [float('inf')] \* n

d[0] = 0

t = 0

for \_ in range(n):

m = float('inf')

u = -1

for v in range(n):

if not s[v] and d[v] < m:

m = d[v]

u = v

s[u] = True

t += d[u]

for v in range(n):

if g[u][v] and not s[v] and g[u][v] < d[v]:

d[v] = g[u][v]

return t

g = [

[0, 2, 5, 0],

[2, 0, 3, 1],

[5, 3, 0, 2],

[0, 1, 2, 0]

]

print(p(g))

#2

def s(a, b, c, d, e, f, g, h, i):

if (a + b + c == 15 and d + e + f == 15 and g + h + i == 15 and

a + d + g == 15 and b + e + h == 15 and c + f + i == 15 and

a + e + i == 15 and c + e + g == 15):

return True

return False

def t():

v = [1, 2, 3, 4, 5, 6, 7, 8, 9]

for a in v:

for b in v:

for c in v:

for d in v:

for e in v:

for f in v:

for g in v:

for h in v:

for i in v:

if len(set([a, b, c, d, e, f, g, h, i])) == 9 and s(a, b, c, d, e, f, g, h, i):

return a, b, c, d, e, f, g, h, i

a, b, c, d, e, f, g, h, i = t()

print(a, b, c, d, e, f, g, h, i)

#3

def c(g, x, v, a):

for i in range(len(g)):

if g[v][i] == 1 and a[i] == x:

return False

return True

def d(g, a, v, r):

if v == len(g):

r.append(a[:])

return

for x in ['r', 'g', 'b']:

if c(g, x, v, a):

a[v] = x

d(g, a, v + 1, r)

a[v] = None

def e(g):

a = [None] \* len(g)

r = []

d(g, a, 0, r)

return r

g = [

[0, 1, 1, 1, 0, 0],

[1, 0, 1, 0, 1, 0],

[1, 1, 0, 1, 0, 1],

[1, 0, 1, 0, 1, 1],

[0, 1, 0, 1, 0, 1],

[0, 0, 1, 1, 1, 0]

]

r = e(g)

print("All valid color combinations:")

for a in r:

print(a)

#4

def f(s, i, x, d):

if x == d:

return True

if i == len(s) or x > d:

return False

if f(s, i + 1, x + s[i], d):

return True

return f(s, i + 1, x, d)

s = [5, 10, 12, 13, 15, 18]

d = 30

print(f(s, 0, 0, d))