**EXP:07 CSP MAP COLOURING**

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PROGRAM:

class Graph:

def \_\_init\_\_(self, vertices):

self.V = vertices

self.graph = [[0 for \_ in range(vertices)] for \_ in range(vertices)]

defisSafe(self, v, colour, c):

for i in range(self.V):

ifself.graph[v][i] == 1 and colour[i] == c:

return False

return True

defgraphColourUtil(self, m, colour, v):

if v == self.V:

return True

for c in range(1, m + 1):

ifself.isSafe(v, colour, c):

colour[v] = c

ifself.graphColourUtil(m, colour, v + 1):

return True

colour[v] = 0

defgraphColouring(self, m):

colour = [0] \* self.V

if not self.graphColourUtil(m, colour, 0):

print("Solution does not exist")

return False

print("Solution exists and Following are the assigned colours:")

for c in colour:

print(c, end=' ')

return True

if \_\_name\_\_ == '\_\_main\_\_':

g = Graph(4)

g.graph = [[0, 1, 1, 1], [1, 0, 1, 0], [1, 1, 0, 1], [1, 0, 1, 0]]

m = 3

g.graphColouring(m)

OUTPUT:

