PRACTICAL NUMBER – 08

NAME – RANVEER M. BHORTEKAR

SECTION/BATCH – A4/B1

ROLL NO. – 06

SUBJECT – DAA

Aim - Implement Graph Colouring algorithm use Graph colouring concept.

Problem Statement - A GSM is a cellular network with its entire geographical range divided into hexadecimal cells. Each cell has a communication tower which connects with mobile phones within cell. Assume this GSM network operates in different frequency ranges. Allot frequencies to each cell such that no adjacent cells have same frequency range. Consider an undirected graph G = (V, E) shown in fig. Find the colour assigned to each node using Backtracking method. Input is the adjacency matrix of a graph G(V, E), where V is the number of Vertices and E is the number of edges.

CODE IN TEXT FORMAT –

```
def next_value(k,n,m,G,x):
    while True:
        x[k]=(x[k]+1)%(m+1)
        if x[k]==0:return
        for j in range(n):
            if G[k][j]!=0 and x[k]==x[j]:
                break
        else:return


def m_coloring(k,n,m,G,x):
    while True:
```

```
    next_value(k,n,m,G,x)
    if x[k]==0:return
    if k==n-1:print(x)
    else:m_coloring(k+1,n,m,G,x)

G=[[0,1,1,1,0],
  [1,0,1,0,1],
  [1,1,0,1,1],
  [1,0,1,0,1],
  [0,1,1,1,0]]
n=len(G)
m=3
x=[0]*n
m_coloring(0,n,m,G,x)
```

CODE SCREENSHOT –