PRACTICAL - 8

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ROLL NO – 38
GITHUB LINK - https://github.com/vrishabhh/daa-lab-practical

CODE-

```
def is_safe(v, graph, color, c):

    for i in range(len(graph)):
        if graph[v][i] == 1 and color[i] == c:
            return False
    return True

def graph_coloring_util(graph, m, color, v):
    if v == len(graph):
        return True

    for c in range(1, m + 1):
        if is_safe(v, graph, color, c):
            color[v] = c
            if graph_coloring_util(graph, m, color, v + 1):
                return True
            color[v] = 0
    return False

def graph_coloring(graph, m):
    color = [0] * len(graph)
    if not graph_coloring_util(graph, m, color, 0):
        print("Solution does not exist with", m, "frequencies")
        return
    print("Assigned colours:")
    for i in range(len(color)):
        print(f"Vertex {i}: Colour {color[i]}")

graph = [
    [0, 1, 1, 1, 1],
    [1, 0, 1, 0, 0],
    [1, 1, 0, 1, 0],
    [1, 0, 1, 0, 1],
```

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

forfreq in range(1, 5):
    print(f"\nTrying with {freq} frequencies:")
    graph_coloring(graph, freq)
```

OUTPUT-