# DAA Lab Pract8

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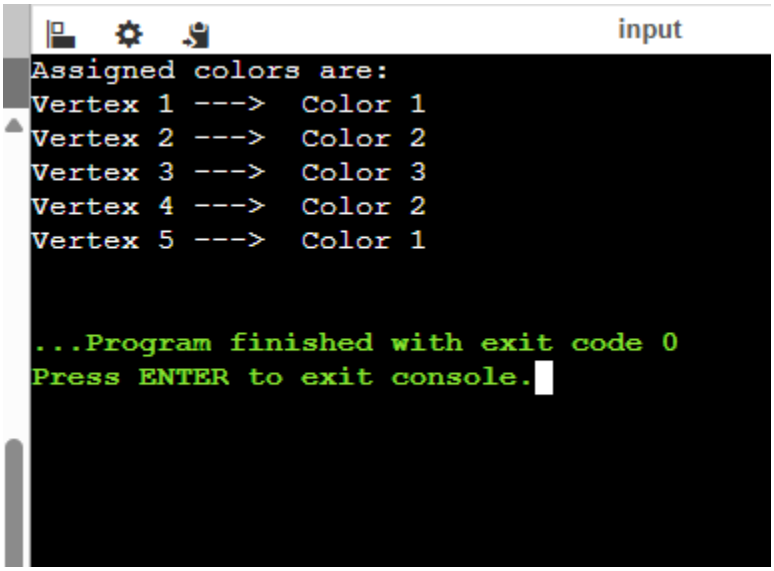
Code :

```
def is_safe(v, graph, color, c):
    """Check if the color c can be assigned to vertex v."""
    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):
    """Utility function for backtracking."""
    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):
    """Main function to solve the M-Coloring problem."""
    color = [0] * len(graph)
    if not graph_coloring_util(graph, m, color, 0):
        print("Solution does not exist")
        return
    print("Assigned colors are:")
    for i in range(len(color)):
```

```
        print(f"Vertex {i + 1} --->  Color {color[i]}")


graph = [
    [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]
]

m = 3
graph_coloring(graph, m)
```

Output :




Git Hub repo link : https://github.com/24tiwaria2-code/DAA-