

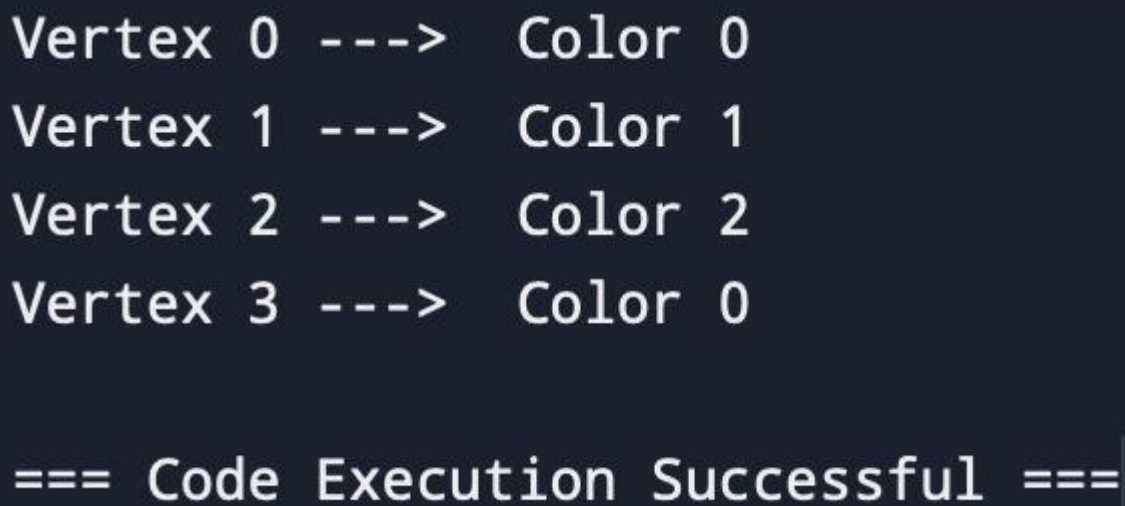
## 116. Graph Coloring

PROGRAM:-

```
def graph_coloring(graph):
    n = len(graph)
    result = [-1] * n
    result[0] = 0
    available = [False] * n
    for u in range(1, n):
        for i in graph[u]:
            if result[i] != -1:
                available[result[i]] = True
        cr = 0
        while cr < n:
            if not available[cr]:
                break
            cr += 1
        result[u] = cr
        for i in graph[u]:
            if result[i] != -1:
                available[result[i]] = False
    for u in range(n):
        print(f"Vertex {u} ---> Color {result[u]}")
graph = [[1, 2], [0, 2], [0, 1, 3], [2]]

graph_coloring(graph)
```

OUTPUT:-

A terminal window with a dark background and light-colored text. It displays the output of the graph coloring program. The output shows four lines: 'Vertex 0 ---> Color 0', 'Vertex 1 ---> Color 1', 'Vertex 2 ---> Color 2', and 'Vertex 3 ---> Color 0'. Below these lines, there is a separator line consisting of three equals signs, followed by the text 'Code Execution Successful', followed by another three equals signs and a vertical cursor bar.

```
Vertex 0 ---> Color 0
Vertex 1 ---> Color 1
Vertex 2 ---> Color 2
Vertex 3 ---> Color 0

=== Code Execution Successful ===
```

TIME COMPLEXITY:- $O(n*v)$