

AI Lab 5
Map Coloring
11762 Muhammad Kashif

Code

```
graph = {
    'A': ['B', 'C'],
    'B': ['A', 'C', 'D'],
    'C': ['A', 'B', 'D', 'E', 'F'],
    'D': ['B', 'C', 'E'],
    'E': ['C', 'D', 'F'],
    'F': ['C', 'E'],
    'G': []}
array = set()
color_L = {}
color = ["Red", "Blue", "Green"]
def csp(array, graph, color, node):
    if node not in array:
        for n in range(len(color)):
            can_use_color = True
            for neighbor in graph[node]:
                if neighbor in array and color_L[neighbor] == color[n]:
                    can_use_color = False
                    break
            if can_use_color:
                color_L[node] = color[n]
                array.add(node)
                for neighbor in graph[node]:
                    csp(array, graph, color, neighbor)
                break
        else:
            return False
    return True
for node in graph.keys():
    if node not in array:
        csp(array, graph, color, node)
for node in graph.keys():
    print(node, ":", color_L[node])
```

Output

```
A : Red
B : Blue
C : Green
D : Red
E : Blue
F : Red
G : Red
```
