EXPERIMENT:11 Write the python program for Map Coloring to implement CSP

PROGRAM:

```
def can_color(region, color, assignment, neighbors):
    for neighbor in neighbors.get(region, []):
        if assignment.get(neighbor) == color:
            return False
    return True

def backtracking_coloring(regions, colors, neighbors, assignment=None):
    if assignment is None:
        assignment = {}
    if len(assignment) == len(regions):
        return assignment

    region = next(r for r in regions if r not in assignment)

    for color in colors:
        if can_color(region, color, assignment, neighbors):
            assignment[region] = color
            result = backtracking_coloring(regions, colors, neighbors, assignment)
            if result:
                return result
            assignment.pop(region)
    return None

regions = ['WA', 'NT', 'SA', 'Q', 'NSW', 'V', 'T']
neighbors = {
    'WA': ['NT', 'SA'],
    'NT': ['WA', 'SA', 'Q'],
    'SA': ['WA', 'NT', 'Q', 'NSW', 'V'],
    'Q' : ['NT', 'SA', 'NSW'],
    'NSW': ['Q', 'SA', 'V'],
    'V' : ['SA', 'NSW'],
```

```
    'T' : []
}
colors = ['Red', 'Green', 'Blue']

solution = backtracking_coloring(regions, colors, neighbors)

if solution:
    for region in regions:
        print(f"{region}: {solution[region]}")
else:
    print("No solution found.")
```

OUTPUT: