

```
1 def is_safe(region, color, assignment, neighbors):
2     for neighbor in neighbors.get(region, []):
3         if neighbor in assignment and assignment[neighbor] == color:
4             return False
5     return True
6
7 def map_coloring(regions, colors, neighbors, assignment={}):
8
9     if len(assignment) == len(regions):
10         return assignment
11
12     unassigned = [r for r in regions if r not in assignment]
13     region = unassigned[0]
14
15     for color in colors:
16         if is_safe(region, color, assignment, neighbors):
17             assignment[region] = color
18             result = map_coloring(regions, colors, neighbors, assignment)
19             if result:
20                 return result
21             del assignment[region]
22
23     return None
```

```
24 regions = ['WA', 'NT', 'SA', 'Q', 'NSW', 'V', 'T']
25 colors = ['Red', 'Green', 'Blue']
26 neighbors = {
27     'WA': ['NT', 'SA'],
28     'NT': ['WA', 'SA', 'Q'],
29     'SA': ['WA', 'NT', 'Q', 'NSW', 'V'],
30     'Q': ['NT', 'SA', 'NSW'],
31     'NSW': ['Q', 'SA', 'V'],
32     'V': ['SA', 'NSW'],
33     'T': []
34 }
35
36 solution = map_coloring(regions, colors, neighbors)
37
38 if solution:
39     print("Map coloring solution:")
40     for region in regions:
41         print(f"{region}: {solution[region]}")
42 else:
43     print("No solution found.")
44
45
```

```
>>> %Run -c $EDITOR_CONTENT
```

```
Map coloring solution:
```

```
WA: Red
```

```
NT: Green
```

```
SA: Blue
```

```
Q: Red
```

```
NSW: Green
```

```
V: Red
```

```
T: Red
```

```
>>>
```