T.C. ESKİŞEHİR TECHNICAL UNIVERSITY
DEPARTMENT OF COMPUTER ENGINEERING

BIM309 – Artificial Intelligence
HOMEWORK II - Report

Map Coloring Using Backtracking Search in Python

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In this homework, I implemented BTS to solve the Map coloring CSP South America.

• **The constrait_problem class:**
This class represents constraint satisfaction problem. Its member variables are:

- **Variables**: 13 countries of South America
- **Domain**: Set of colors {red, blue, green, yellow}
- **Constraints**: Check if an assignment {country = color} is possible we simply check if any of the country's neighbors are already assigned this same color.

A dictionary that associates each country with a list of its neighbors

A function that checks the remaining possible colors for a country with respect to an assignment by subtracting the colors that violate the constraint (assigned to a neighbor of the country in question).

Defined a function that checks if color is consistent with a country for the current assignment. This function is then passed as a constraint argument to the CSP instance.

Defined a minimum remaining value (MRV) function that finds the country that has the fewest number of possible values among the unassigned set of countries in a CSP instance.

Sample Results: