**AMERICAN INTERNATIONAL UNIVERSITY-BANGLADESH**

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| Assignment Title: | Map Coloring |
| Assignment No: | 02 Date of Submission: 29 October 2021 |
| Course Title: | Design and Analysis of Algorithm |
| Course Code: | 01562 Section: |
| Semester: | Fall 2020-21 Course Teacher: DR. M M MANJURUL ISLAM |

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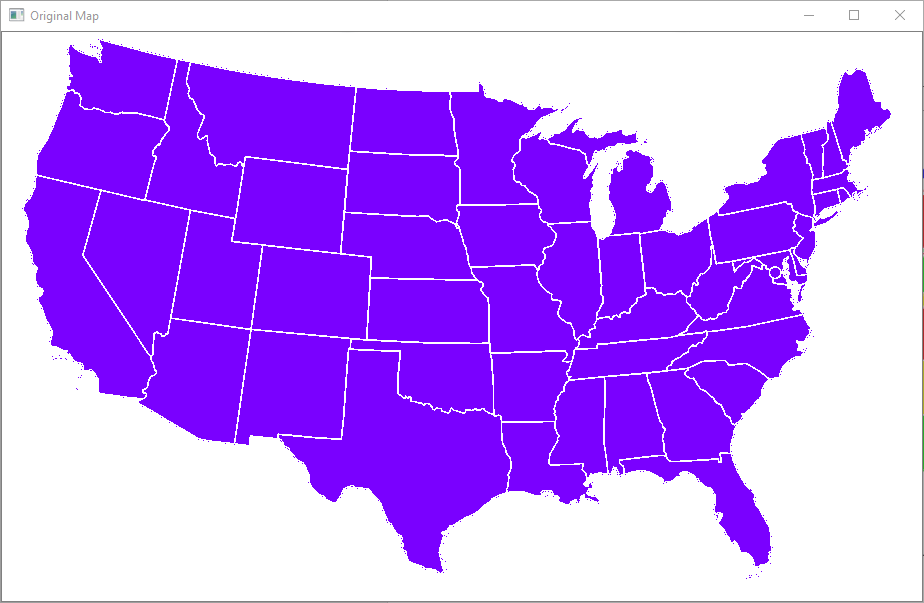
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| **No** |  | **Name** | **ID** | **Program** | **Signature** |
| 1 | Jakaria Islam Emon |  | **21-92037-2** | MSCS |  |

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| ***Faculty use only*** |  | |
| FACULTYCOMMENTS | **Marks Obtained** |  |
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|  | **Total Marks** |  |
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Map coloring, using four colors

Input Image of a MAP: (The input image background and borders should be white.)

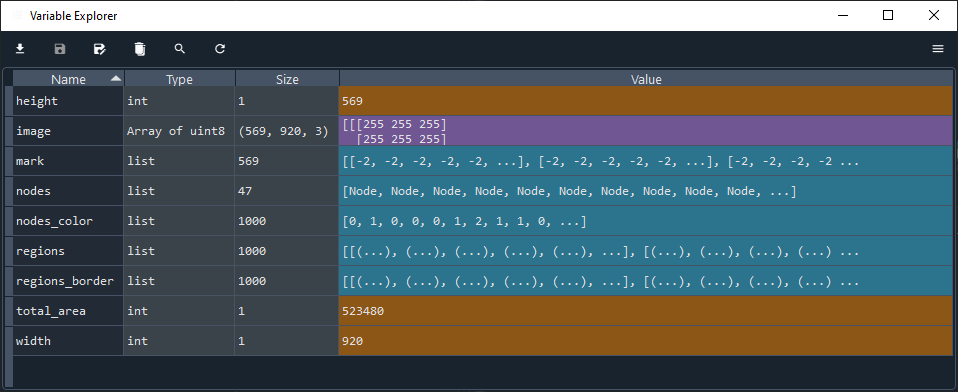


Output Map: (This program gets a map image as an input and produces all possible valid colorings of that map using backtracking.)

Chart

Description automatically generated with medium confidence

Variable explorer after running on USA.PNG file



Algorithm

1. Detecting all non-white regions (e.g., provinces or states).

2. Converting the input map to a simple planar graph:

There will be a node for each region. Two nodes will be adjacent, if and only if their corresponding regions have a common border on the map.

3. Using backtracking for [coloring] that graph (it's a recursive function that produces all valid colorings).

4. Displaying all produced colorings on the given map.