RA1911003010668
Isha Sah

Lab 2: Developing agent programs for Real World Problems.

GRAPH COLORING PROBLEM

Problem Formulation:

Given a graph, color its edges such that no two adjacent sides have the same color, using minimum no. of colors & return the Chromatic number.

Problem Solving

Graph coloring problem is to assign colors to certain elements of a graph subject to certain constraints.

Vertex coloring is the most common graph coloring problem. The problem goes: given m colors, find a way of coloring the vertices of the graph such that no two adjacent vertices are colored using the same color. The other graph coloring problems like edge coloring or face coloring (Geographical Map coloring) can be transformed into vertex coloring.

Chromatic Number :

The smallest number of colors needed to color a graph G is called its chromatic number.

Algorithm :

. Color first vertex with first color.

Loop for remaining V-1 vertices :

. Consider the currently picked vertex & color it with the lowest numbered color that has not been used on any previously colored vertices adjacent to it.

. If all previously used colors appear on vertices adjacent to v, assign a new color to it.

. Repeat these for all edges.

. Index of color used is the chromatic number.