Practical -8

Name: Ujjwal Tiwari

Section:A2

Batch:B4

Roll :51

Aim: Implement Graph Colouring algorithm use Graph colouring concept.

Code:-

#include <stdio.h>

#include <stdbool.h>

#define V 5

bool isSafe(int v, bool graph[V][V], int color[], int c) {

for (int i = 0; i < V; i++)

if (graph[v][i] && color[i] == c)

return false;

return true;

}

bool graphColoringUtil(bool graph[V][V], int m, int color[], int v) {

if (v == V)

return true;

for (int c = 1; c <= m; c++) {

if (isSafe(v, graph, color, c)) {

color[v] = c;

if (graphColoringUtil(graph, m, color, v + 1))

return true;

color[v] = 0;

}

}

return false;

}

bool graphColoring(bool graph[V][V], int m) {

int color[V];

for (int i = 0; i < V; i++)

color[i] = 0;

if (!graphColoringUtil(graph, m, color, 0)) {

printf("Solution does not exist.\n");

return false;

}

printf("Color assignment to vertices:\n");

for (int i = 0; i < V; i++)

printf("Vertex %d --> Color %d\n", i + 1, color[i]);

return true;

}

int main() {

bool graph[V][V] = {

{0, 1, 1, 1, 0},

{1, 0, 1, 0, 0},

{1, 1, 0, 1, 1},

{1, 0, 1, 0, 1},

{0, 0, 1, 1, 0}

};

int m = 3;

graphColoring(graph, m);

return 0;

}

Output:-

