#include <stdio.h>

#include <stdlib.h>

#include <time.h>

int visited[1000];

int A[1000][1000];

void DFS(int i, int max) {

printf("%d ", i);

visited[i] = 1;

for (int j = 0; j < max; j++) {

if (A[i][j] == 1 && !visited[j])

DFS(j, max);

}

}

int main() {

int max;

printf("Enter the number of Nodes: ");

scanf("%d", &max);

printf("The Nodes are: \n");

for (int i = 0; i < max; i++) {

printf("%d ", i);

}

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

visited[i] = 0;

int points[max][2];

int upper = max, lower = 2;

srand(time(0));

for (int i = 0; i < max; i++) {

int x = (rand() % (upper - lower + 1)) + lower;

int y = (rand() % (upper - lower + 1)) + lower;

points[i][0] = x;

points[i][1] = y;

for (int j = 0; j < i; j++) {

if (points[j][0] == x && points[j][1] == y){

i--;

break;

}

}

}

int nC2 = (max \* (max - 1)) / 4, nCount = 0;

FILE \*filePointer, \*fileCommands;

filePointer = fopen("Points.txt", "w"); // open points file

fileCommands = fopen("Commands.txt", "w"); // open command file

fputs ("set xrange [", fileCommands); // to command file

fprintf(fileCommands, "%d", 0); // to command file

fputs(":", fileCommands); // to command file

fprintf(fileCommands, "%d", (max + 2)); // to command file

fputs("]\n", fileCommands); // to command file

fputs ("set yrange [", fileCommands); // to command file

fprintf(fileCommands, "%d", 0); // to command file

fputs(":", fileCommands); // to command file

fprintf(fileCommands, "%d", (max + 2)); // to command file

fputs("]\n", fileCommands); // to command file

srand(time(0));

for (int i = 0; i < max; i++) {

fprintf(filePointer, "%d %d\n", points[i][0], points[i][1]); // to points file

for (int j = 0; j < max; j++) {

if ((i == j) || A[j][i] == 1 || nC2 == nCount) {

A[i][j] = 0;

} else {

int num = rand() % 2;

A[i][j] = num;

if (num == 1){

fputs("set arrow from ", fileCommands); // to command file

fprintf(fileCommands, "%d,%d", points[i][0], points[i][1]); // to command file

fputs(" to ", fileCommands); // to command file

fprintf(fileCommands, "%d,%d\n", points[j][0], points[j][1]); // to command file

nCount++;

}

}

}

}

fputs("plot 'Points.txt' with circles", fileCommands); // to command file

fclose(filePointer); // close points file

fclose(fileCommands); // close command file

int start;

printf("\nEnter the start: ");

scanf("%d", &start);

printf("\nDFS Transversal: \n");

DFS(start, max);

return 0;

}

**Commands.txt**

set xrange [0:7]

set yrange [0:7]

set arrow from 4,5 to 5,2

set arrow from 4,5 to 3,3

set arrow from 3,4 to 5,2

set arrow from 3,4 to 3,3

set arrow from 5,2 to 3,3

plot 'Points.txt' with circles

**Points.txt**

5 2

2 2

5 3

3 3

4 3

