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1  /*
2  Filename: p11.h
3  Author(s): Zachary Rea and Parker Ross
4  Date: 19 April 2023
5  Description: The header file for p11
6  */
7  #ifndef __P11_H
8  #define __P11_H
9  #include "p1.h"
10 #include "iq.h"
11
12 //*****
13 class Graph {
14     private:
15         //Variables
16         int *a;
17         intList *labels;
18         iQ *q;
19         int n;
20         int vCount;
21         int eCount;
22         bool directed;
23         int *lambda;
24         int *set;
25         int const INFINITE = 1000000;
26         int const X = 0;
27         int const Y = 1;
28         //Functions
29         int ind(int x, int y) const;
30         int labelToVid(int label) const;
31         int vidToLabel(int vid) const;
32         void dijkstra(int s);
33         bool minLambdaY(int &minV);
34         //New for P11
35         bool isCyclicDirected();
36         bool isCyclicUndirected();
37     public:
38         //Functions
39         Graph(int n = 100, bool directed = true);
40         ~Graph();
41         bool createV(int label);
42         bool addEdge(int uLabel, int vLabel, int weight);
43         bool deleteEdge(int uLabel, int vLabel, int &weight);
44         void clear();
45         bool isEdge(int uLabel, int vLabel) const;
46         bool isV(int Label) const;
47         int inDegree(int label) const;
48         int outDegree(int label) const;
49         int sizeV() const;
50         int sizeUsedV() const;
51         int sizeE() const;
52         void printIt();
53         void bfPrint(int label) const;
54         bool isPath(int ulabel, int vlabel) const;
55         void printPaths() const;
56         bool dijkstra(int sLabel, int dLabel, int &distance);
57         //New for P11
58         int degree(int label);
59         bool isCyclic();
60 };
61 #endif

```