



1000. Compute degrees using adjacency matrix

Total: 205 Accepted: 80

Description

Time Limit: 1sec Memory Limit: 256MB

Given a matrix of a graph, output all the degrees of the vertices.

```
typedef struct {
    int arcs[MAX_SIZE][MAX_SIZE]; //adjacency matrix of the graph
    int vexnum; // number of vertices
    int arcnum; //number of edges
} AMGraph;

vector<pair<int, int> > degree(const AMGraph &g);
// returns a list of indegrees and outdegrees for all vertices

AMGraph mkAMGraph(const char * f);
/*
```

The file f contains the adjacency matrix of a graph.

The first line is the number of vertices.

The next n lines is the adjacency matrix. For example,

```
3
0 1 0
0 0 1
1 0 0
```

The function returns an object of type AMGraph representing the graph.

Input

Sample input:

```
1
0

2
0 0
0 0

2
0 1
1 0

2
0 1
0 0

2
0 0
```

```
1 0

3
0 0 0
0 0 0
0 0 0

3
0 1 0
0 0 0
0 0 0

3
0 1 0
0 0 1
1 0 0

3
0 1 0
0 0 0
1 1 0

4
0 1 0 0
0 0 1 0
0 0 0 1
1 0 0 0

4
0 1 1 1
1 0 1 1
1 1 0 1
1 1 1 0

10
0 1 1 1 1 1 1 1 1 1
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0

10
0 0 0 0 0 0 0 0 0 0
1 0 0 0 0 0 0 0 0 0
1 0 0 0 0 0 0 0 0 0
1 0 0 0 0 0 0 0 0 0
1 0 0 0 0 0 0 0 0 0
1 0 0 0 0 0 0 0 0 0
1 0 0 0 0 0 0 0 0 0
1 0 0 0 0 0 0 0 0 0
1 0 0 0 0 0 0 0 0 0
1 0 0 0 0 0 0 0 0 0

10
0 1 0 0 0 0 0 0 0 0
0 0 1 0 0 0 0 0 0 0
0 0 0 1 0 0 0 0 0 0
0 0 0 0 1 0 0 0 0 0
0 0 0 0 0 1 0 0 0 0
0 0 0 0 0 0 1 0 0 0
0 0 0 0 0 0 0 1 0 0
0 0 0 0 0 0 0 0 1 0
0 0 0 0 0 0 0 0 0 1
1 0 0 0 0 0 0 0 0 0
```

```
10
0 1 1 1 1 1 1 1 1 1
1 0 1 1 1 1 1 1 1 1
1 1 0 1 1 1 1 1 1 1
1 1 1 0 1 1 1 1 1 1
1 1 1 1 0 1 1 1 1 1
1 1 1 1 1 0 1 1 1 1
1 1 1 1 1 1 0 1 1 1
1 1 1 1 1 1 1 0 1 1
1 1 1 1 1 1 1 1 0 1
1 1 1 1 1 1 1 1 1 0
```

Hint

Design your own test data. No testing program is provided at the moment.

Problem Source: Graph Algorithms

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