alasleimi / **Hierholzer-Algorithm**

Branch: **master** **Hierholzer-Algorithm** / **main** Find file Copy path

alasleimi Create main `f5d8015` on Sep 14, 2016

1 contributor

81 lines (57 sloc) 1.39 KB

```
#include <iostream>
#include <vector>
#include <stack>
#include <algorithm>
#include <list>
using namespace std;

    vector < list<int> > graph;
    vector <int> deg;
    stack<int> head,tail ;


int main()
{
    /** n is the number of vertices
     *  a is the number od edges
     *  deg is the degree of a given vertex
     */

    int n, a, x,y ;
    cin >> n >> a;
    graph.resize(n+1);
    deg.resize(n+1);
    for(; a--;)
    {
        cin >> x >> y;
        graph[x].push_back(y);
        graph[y].push_back(x);
        ++deg[x];
        ++deg[y];
    }

    if(any_of(deg.begin()+1,deg.end(),[](int i){return i&1;}))

        cout << "-1";           /**< no euler cycle exists (all degrees must be even) */

    else
    {
        head.push(1);
        while(!head.empty())
        {
            while(deg[head.top()])
            {

                int v = graph[head.top()].back();
                graph[head.top()].pop_back();
                graph[v].remove(head.top());
                --deg[head.top()] ;
                head.push(v);
                --deg[v];

            }

            while(!head.empty()&&!deg[head.top()])
            {
                tail.push( head.top());
                head.pop();




            }
```

```
63
64
65
66
67          }
68          /**< tail is the eulerian cycle */
69          while(!tail.empty())
70          {
71              cout << tail.top() <<' ';
72              tail.pop();
73          }
74
75
76      }
77
78
79
80  }
```