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/*--- HWSol.cpp ---*/
//Mike Hanling

#include <iostream>
#include <fstream>
#include <string>
#include <vector>
using namespace std;

class dfa {
    //states will be sequential integers from 0 (0 will be initial state)
    //accepting states is list of len q will a true/false for each state
public:
    int state = 0;
    vector<vector<int>>> d;
    vector<bool> w;
    void transition(char x) {
        int z = x - 'a';
        state = d[state][z];
    }
    bool isAccepting() {
        return w[state];
    }
};

istream& operator>> (istream& in, dfa& m) {
    string junk;
    int val;
    vector<int> vals;
    int row = 0;
    int col = 0;

    in >> row >> junk >> col;
    for (int i = 0; i < row; ++i) {
        vals.clear();
        for (int j = 0; j < col; ++j) {
            in >> val;
            vals.push_back(val);
        }
        m.d.push_back(vals);
    }

    for (int i = 0; i < row; ++i) {
        int val;
        in >> val;
        m.w.push_back(val == 1 ? true : false);
    }

    return in;
}

int main() {
    //ask user for input file of FA
    cout << "What is the name of the file describing the FA?" << endl;

    //read in from file
    string filename;
    cin >> filename;
    ifstream fin(filename);

    //make an instance of fa and fill it with read info
    dfa m;
    fin >> m;

    //read in string from user
    string in;

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    cin >> in;

    //step through every letter and change the current state
    for (int i=0; i < in.length(); ++i) {
        m.transition(in.at(i));
    }

    //output if the ending state is accepting or not
    cout << (m.isAccepting() ? "accept" : "reject") << endl;

    return 0;
}

```