```cpp
#include <iostream>
#include <fstream>
#include <vector>
using namespace std;

int stoic(string line)
{
    int i = 0;
    int num = 0;
    while (line[i] != 0)
    {
        if (line[0] == '-')
        {
            return -1;
        }
        num *= 10;
        num += (line[i] - '0');
        i++;
    }
    return num;
}

void printVectori(vector<vector<int>> v)
{
    cout << "Printing Mealy Vector" << endl;
    for (int i = 0; i < v.size(); i++)
    {
        for (int j = 0; j < v[i].size(); j++)
        {
            cout << v[i][j] << " ";
        }
        cout << endl;
    }
}

void printVectors(vector<vector<string>> v)
{
    cout << "Printing Output Vector" << endl;

    for (int i = 0; i < v.size(); i++)
    {
        for (int j = 0; j < v[i].size(); j++)
        {
            cout << v[i][j] << " ";
        }
        cout << endl;
    }
}

int main()
{
    ifstream file;
    string line;
    file.open("input.txt");
    int i = 0;
    int initial;
    vector<vector<int>> MOORE;
    vector<vector<string>> OUT;
    while (getline(file, line))
```

```
    {
        if (i == 0)
        {
            initial = stoic(line);
        }
        else
        {
            vector<int> temp1;
            vector<string> temp2;
            int x = 0;
            int y = 0;
            string num = "";
            string outNum = "";
            while (line[x] != 0)
            {
                if (line[x] == ' ')
                {
                    if (y % 2 == 0)
                    {
                        temp1.push_back(stoic(num));
                        num = "";
                    }
                    else
                    {
                        temp2.push_back(outNum);
                        outNum = "";
                    }
                    x++;
                    y++;
                    continue;
                }
                if (y % 2 == 0)
                {
                    num += line[x++];
                }
                else
                {
                    outNum += line[x++];
                }
            }
            temp2.push_back(outNum);
            MOORE.push_back(temp1);
            OUT.push_back(temp2);
        }
        i++;
    }

    file.close();
xy:
    int curr = initial;
    cout << "Enter String : ";
    string s;
    getline(cin, s);
    if (s.length() == 0)
    {
        cout << "Exiting ,null input";
        return 0;
    }
    if (s == "-1")
    {
```

```
            cout << "Exiting";
            return 0;
        }
        int size = s.size(), k = 0;
        string output = "";
        while (curr != -1 && k <= size)
        {
            string t = "";
            t += s[k++];
            if (OUT[curr][stoic(t)] != "-1")
            {
                cout << "q" << curr << " -> ";
                output += OUT[curr][stoic(t)];
                cout << "on input " << t << " ";
                cout << "gives output " << OUT[curr][stoic(t)];
            }
            curr = MOORE[curr][stoic(t)];
            if (curr != -1)
                cout << " and goes to q" << curr;
            else
            {
                cout << " and reaches end" << endl;
            }
            cout << endl;
        }

        cout << "Output is : " << output << endl;
        goto xy;
    }

    /*
    Input file contents :
    0
    0 A 1 A
    -1 B 2 B
    -1 A 0 A
    */
```