```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;
}

int main()
{
    ifstream file;
    string line;
    file.open("input.txt");
    int i = 0;
    int initial;
    vector<vector<int>> MEALY;
    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 = "";
                    }
```

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                    x++;
                    y++;
                    continue;
                }
                if (y % 2 == 0)
                {
                    num += line[x++];
                }
                else
                {
                    outNum += line[x++];
                }
            }
            temp2.push_back(outNum);
            MEALY.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 << "Retry, wrong or null input" << endl;
        goto xy;
    }
    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 = MEALY[curr][stoic(t)];
        if (curr != -1)
            cout << " and goes to q" << curr << endl;
        else
        {
            cout << "reaches end" << endl;
        }
    }

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

```
}

/*
Input file contents:
0
1 A -1 -1
-1 -1 2 AB
3 B 11 B
-1 -1 4 AB
5 A -1 -1
-1 -1 6 B
4 A 7 BA
8 A -1 -1
-1 -1 9 B
10 A -1 -1
-1 -1 11 B
1 A -1 -1

*/
```