HW #3: Due date March 24th, in class

Write a Java program that takes the description of a deterministic finite automata, and simulates it. Thus, when you run your program, it will read the description of the automata from a file called autoinput. Next, it will read a string from standard input (the terminal). If the input string is accepted by the automaton whose description was just read from the file autoinput, your program will print a YES, else it will print a NO.

The automaton is described by five pieces of data:

1. Set of States: States are numbered 1, 2, 3, 4, 5, ... The states of the automata are all entered in the first line of the input file and are separated by spaces.

2. Input Alphabet: assume that the alphabet symbols will always consist of a single letter. The alphabet is entered in the second line of the input file and each element is separated by spaces.

3. The Start State: The single start state is entered in the third line of the input file.

4. The Final State(s): The set of final states is entered in the fourth line. Each final state is separated by a space.

5. Transition Function: is entered fifth line onwards in the input file. Each transition is entered in a separate line and contains exactly 3 items separated by spaces: the first item is a state $s$, the second item is the input alphabet $a$, and the third item is the state that is reached from state $s$ on input symbol $a$. The last line includes the $\$\$ symbol to indicate the end of file.

Assume that all states and alphabet symbols consist of a single letter or digit.

Here is an example input file:

```
1 2 3  comment: 3 states
a b  comment: 2 input symbols
1  comment: 1 is the start state
2 3  comment: 2 & 3 are final states
1 a 1  comment: transition function begins
1 b 2
2 b 2
2 a 3
3 a 2
3 b 2  comment: transition function ends
$  comment: End of file indicator
```

Input string is entered as a sequence of the alphabet symbols separated by spaces and ending in the $\$\$ sign. For example:

```
a a a b b a a $```

You must submit the following things in class:

1. Printed listing of your code

2. Sample runs of your program (you can use a screen dump) for 2 different machines with at least 4 states each. Show the results for 4 different inputs for each machine.