

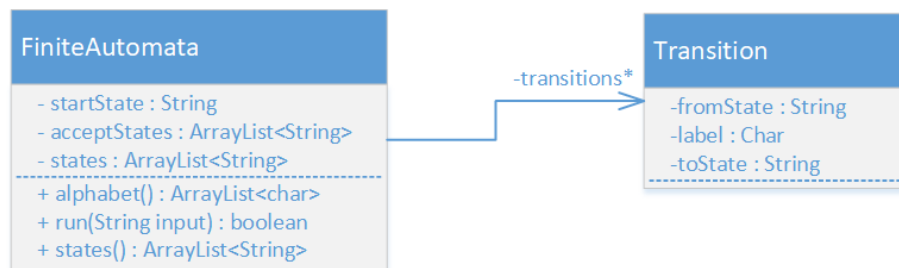
## CS475 Computation Theory

### Topic 3 Assignment

In this assignment, you must create a Netbeans Java program that:

- prompts the user for a file location (use JFileChooser)
- reads a deterministic finite automata (DFA) from a text file (see format below),
- displays to the user the alphabet associated with the DFA that was read
- prompts the user for an input string (use JOptionPane),
- displays whether the DFA accepts the user's input string (use JOptionPane).
- as Java comments give the Big-O analysis of the fileInput and run methods
- as a separate file, submit the DFA file you "unit" tested on.

Minimally, your program must implement the following domain model (additional classes and method will be required),



The input file containing the DFA must have the format corresponding to the following example two state DFA with alphabet  $\Sigma = \{a, b\}$

q0	<i>// The start state (states may be more than two characters)</i>
q1	<i>// List of accept states delimited by spaces</i>
q0 a q1	<i>// A list of transitions, one per line, with format</i>
q0 b q2	<i>// fromState label toState</i>
q1 a q1	<i>// Note you cannot assume the state names, start state,</i>
q1 b q0	<i>// accepts states, alphabet labels, or number of transitions.</i>
q2 a q2	<i>// Each of these can be determined from the input file</i>
q2 b q0	<i>// containing the DFA.</i>

As you are close to graduation, consider this assignment as a simple job interview question with the user being the interviewer who understands DFAs and wants to load their DFA from a file using the above format and test various inputs for acceptance by the DFA. You can certainly ask clarifying questions, but at this point in your education, you should be able to implement this solution without being told all the additional criteria you need to consider to get this program to work. Furthermore, in an actual job interview with such a question, you might not have access to the Internet. Hence, only use the Internet to look up Java classes such as JFileChooser and JOptionPane, etc., but you should at least memorize this gist of these classes and their names.

This is an individual assignment. If you have questions email the faculty (don't post in the forum).

Submit your NetBeans project and example DFA input file to the Topic 3 drop box folder in the online course shell for this course section in Worldclass. Don't forget the Big-O analysis.

## CS475 Computation Theory

### Topic 3 Assignment

#### Topic 3 Assignment DFA Java program design, implementation, and analysis

Assignment	Exemplary	Advanced	Proficient	Not Demonstrated or Major Issues
DFA Definition			All classes and methods appropriately defined	
			20	
I/O			Program Input and Output appropriately defined	
			20	
General design Java Constructs		Appropriate design for the problem	Java constructs appropriately used	
		20 – 16	15	
Execution and	Program executes correctly for all DFA test cases	Program executes correctly for most DFA test cases	Program executes correctly for an appropriately tested user DFA	
	30 – 21	20 – 16	15	
Analysis	Correct Big-Oh Analysis	Reasonable Big-Oh analysis		
	10 – 6	5 – 1		
Deductions	Submitted on time Appropriately commented Executes using NetBeans	Inappropriate comments 1-10% Compiles correctly	3% deducted per day late	<b>Not</b> submitted within five days of due date or <b>does not</b> compile

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