CS345: Assignment 1

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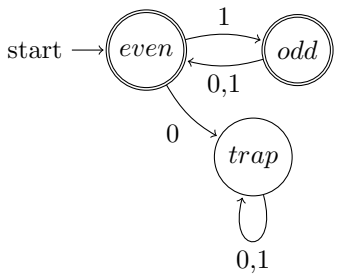
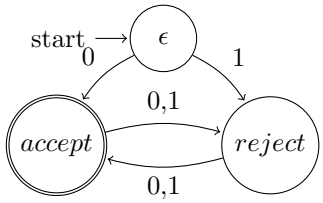
09/16/2011

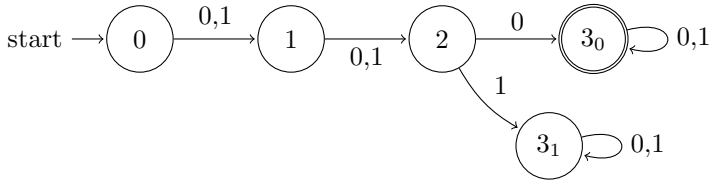
Exercise 1.6i



Exercise 1.6e

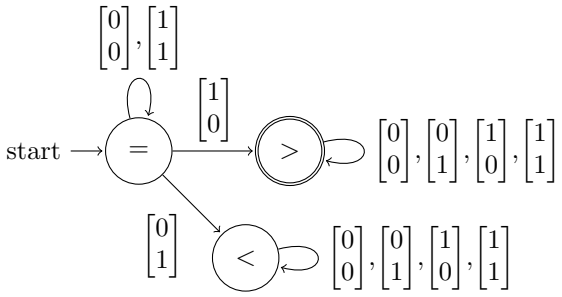


Exercise 1.6d



Problem 1.34

By definition, a language is *regular* if it recognized by some finite automaton. The finite automaton given below recognizes the language D.
$\therefore$ The language is regular.



$$(Q, \Sigma, \delta, q_0, F) = (\{=, <, >\}, \{\begin{bmatrix}0\\0\end{bmatrix}, \begin{bmatrix}0\\1\end{bmatrix}, \begin{bmatrix}1\\0\end{bmatrix}, \begin{bmatrix}1\\1\end{bmatrix}\}, see\ table, =, \{>\})$$

Table 1: Transition Function δ

	$\begin{bmatrix}0\\0\end{bmatrix}$	$\begin{bmatrix}0\\1\end{bmatrix}$	$\begin{bmatrix}1\\0\end{bmatrix}$	$\begin{bmatrix}1\\1\end{bmatrix}$
$=$	$=$	$<$	$>$	$=$
$<$	$<$	$<$	$<$	$<$
$>$	$>$	$>$	$>$	$>$