

CMSC330 Spring 2011 Quiz #2 - SOLUTIONS

Name _____

Discussion Time (circle one): 9am 10am 11am 12pm 1pm 2pm

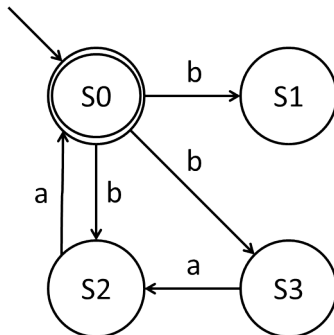
Instructions

- Do not start this test until you are told to do so!
- You have 15 minutes for this quiz.
- This is a closed book exam. No notes or other aids are allowed.
- For partial credit, show all of your work and clearly indicate your answers.
- Write neatly. Credit cannot be given for illegible answers.

1. (3 pts) Compute $\text{trans}(r)$, where $r = a^*(ba \mid ab)^*$.

$\{ \langle a, a^*(ba \mid ab)^* \rangle, \langle a, b(ab \mid ba)^* \rangle, \langle b, a(ab \mid ba)^* \rangle \}$ (Can also have leading ϵ s.)

2. (2 pts) In determinizing the following NFA, what would be the target state in the DFA of the a-transition from state $\{S1, S2, S3\}$?



$\{S0, S2\}$

3. (2 pt) Give a derivation for the string 0111 in the grammar $S \rightarrow 1 \mid 0S1 \mid S1$

$S \Rightarrow 0S1 \Rightarrow 0S11 \Rightarrow 0111$

4. (3 pts) Give a grammar for the following language: strings of form $0^m 1^n$ where $m > n \geq 0$ (i.e. 0s are before 1s and number of 0s is strictly greater than number of 1s.).

$S \rightarrow 0 \mid 0S \mid 0S1$