CMSC 330, Spring 2018 Quiz 3

Instructions

• Do not start this quiz until you are told to do so.
• You have 15 minutes for this quiz.
• This is a closed book quiz. No notes or other aids are allowed.
• For partial credit, show all your work and clearly indicate your answers.

1a. (4 points) Write a grammar for:
   \[ s^y c^z, \text{ where } z = 2y + 1 \text{ and } y \geq 0 \]

1b. (3 points) Write a left-most derivation of “(boots and cats) and boots” from the following grammar:
   \[ S \Rightarrow S \text{ and } S | S \text{ xor } S | (S) | \text{ boots } | \text{ cats} \]

2. (3 points) Circle ”Accept” if the NFA accepts the given string. Circle ”Reject” otherwise.

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0 0 0 0 1 1
\text{Accept} \quad \text{Reject} \quad \text{Accept} \quad \text{Reject} \quad \text{Accept} \quad \text{Reject}

“0001”

“01011”

“01100101”
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3. (10 points) Convert the following NFA to a DFA (make sure to show your work for partial credit):