

CMSC 330, Spring 2018 Quiz 3

Name _____

Discussion Time (circle one) 10am 11am 12pm 1pm 2pm 3pm

Discussion TA (circle one) BT Daniel Chris Alex Derek Pei-Jo Akbar Justin L.
 Tal Shriraj Cameron Eric Kesha Kameron Michael S. Michael P.

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:

$$s^y e^z, \text{ where } z = 2y + 1 \text{ and } y \geq 0$$

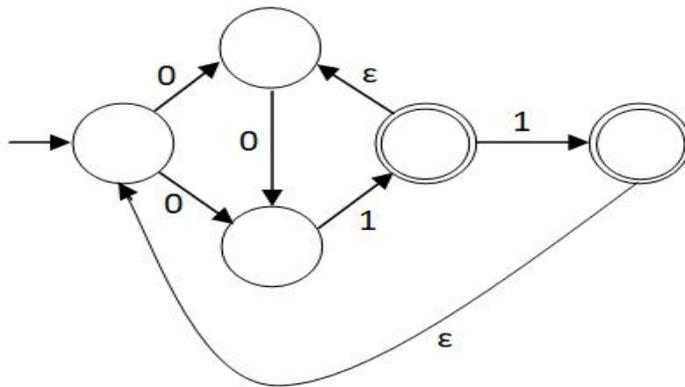
$$S \Rightarrow sSee \mid e$$

1b. (3 points) Write a left-most derivation of “(boots and cats) and boots” from the following grammar:

$$S \Rightarrow S \text{ and } S \mid S \text{ xor } S \mid (S) \mid \text{boots} \mid \text{cats}$$

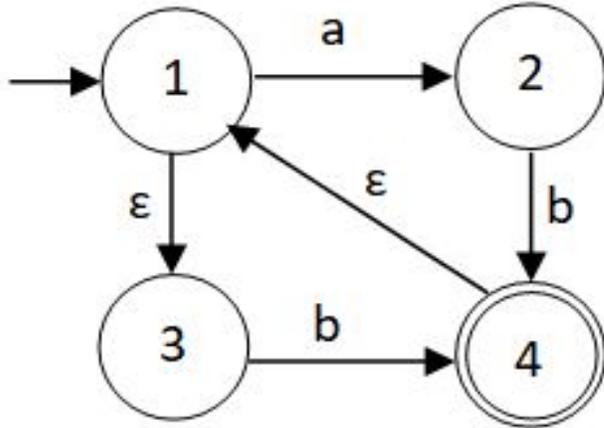
$$S \Rightarrow S \text{ and } S \Rightarrow (S) \text{ and } S \Rightarrow (S \text{ and } S) \text{ and } S \Rightarrow (\text{boots and } S) \text{ and } S \Rightarrow (\text{boots and cats}) \text{ and } S \\ \Rightarrow (\text{boots and cats}) \text{ and boots}$$

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



- | | | |
|------------|--------|--------|
| “0001” | Accept | Reject |
| “01011” | Accept | Reject |
| “01100101” | Accept | Reject |

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



Sol:

