

CMSC330 Fall 2015 Quiz #3 solution

Name _____

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

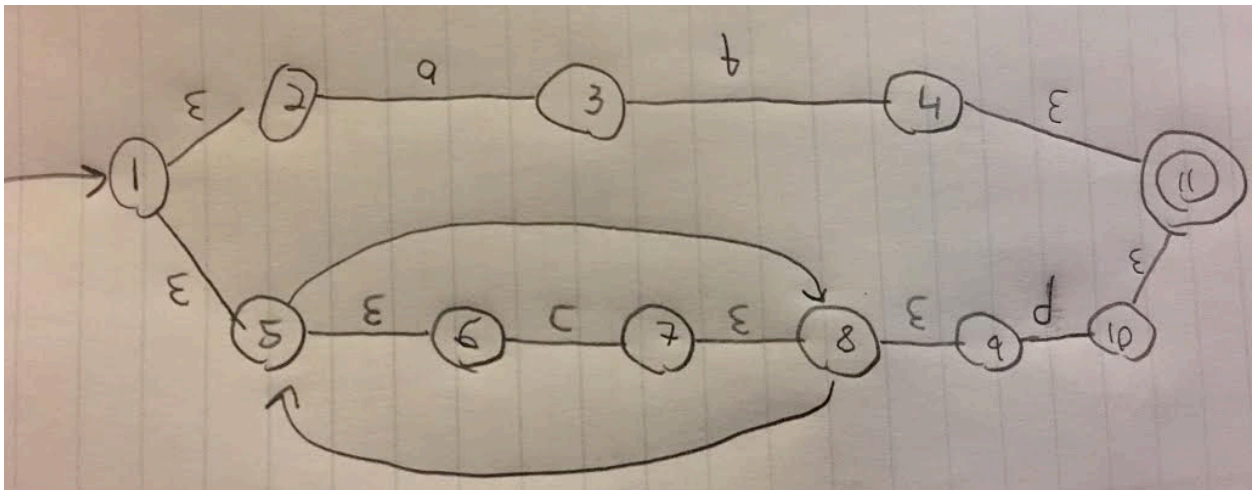
Discussion TA (circle one): Adam Amelia Maria Chris Samuel Josh Michael Max Candice

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.

1. (5 pts) Construct and draw an NFA for the following regular expression.

$ab \mid c^*d$



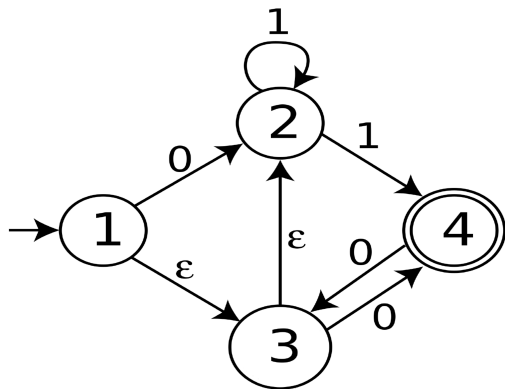
ab 1 pts

c^* 2 pts

(c^*d) 1 pts

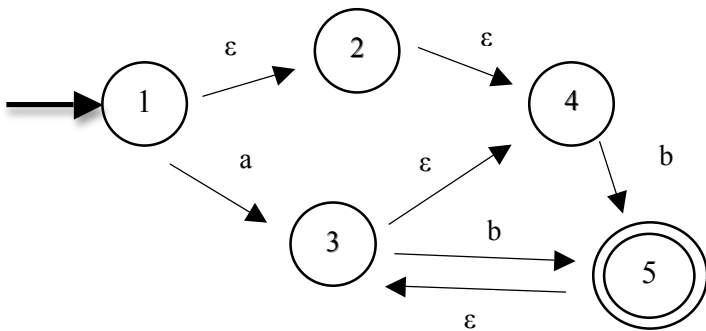
putting ab and c^*d correctly 1 pts

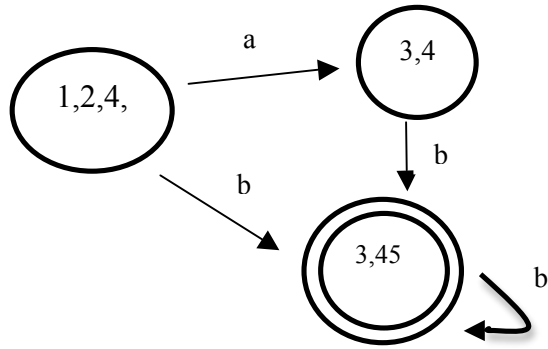
2. (3 pts) Circle "Accept" if the NFA accepts the given string. Circle "Reject" otherwise.



- a. 00001111 **Accept** Reject (1 pts)
 b. 1111 **Accept** Reject (1 pts)
 c. 1000 Accept **Reject (1 pts)**

3. (8 pts) Convert the NFA to a DFA.





5 pts for the 3-state DFA

1 pts for each state has correct subset (name)

4. (4 pts) Given the grammar:

$S \rightarrow bS \mid TaT \mid a$

$T \rightarrow Sb \mid a$

Show the sequence of a leftmost derivation of the string abaa.

Answer: $S \rightarrow TaT \rightarrow SbaT \rightarrow abaT \rightarrow abaa$.

Rubric: 1 point for choosing TaT . 1 point for leftmost derivation. 2 points for getting to abaa through a sequence of steps.