

CMSC330 Fall 2009 Quiz #1

Name _____

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

Do not start this exam until you are told to do so!

Instructions

- You have 15 minutes for this quiz.
- This is a closed book exam. No notes or other aids are allowed.
- Answer essay questions concisely using 2-3 sentences. Longer answers are not necessary and a penalty may be applied.
- For partial credit, show all of your work and clearly indicate your answers.
- Write neatly. Credit cannot be given for illegible answers.

1. (4 pts) What is the output (if any) of the following Ruby program? Write FAIL if code does not execute.

```
a = [1,2,3 ]  
a[4] = 5                      # OUTPUT =  
a.each{ |x| puts "#{x}" }
```

2. (4 pts) Is it true that every DFA is a NFA? Explain your answer.

3. (4 pts) Write a DFA that accepts the language $1(0011)^*$. You do not need to use the algorithms described in class.

4. (8 pts) Begin converting the following NFA into a DFA by applying the subset construction algorithm discussed in class. You do not need to produce the entire DFA. Create at least 2 DFA states (starting state & additional state) and the transition (with label) connecting them. Be sure to list the NFA states represented by each DFA state.

