

CMSC330 Fall 2009 Example 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. (6 pts) Programming languages

Name a disadvantage of dynamic types in terms of program correctness. Provide a code example in Ruby showing the disadvantage.

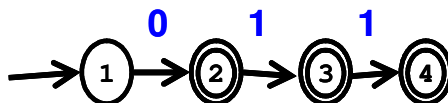
2. (4 pts) Ruby features

What is the output (if any) of the following Ruby programs? Write FAIL if code does not execute.

- a. `a = []`
`a[1] = "b"`
`a[2] = 3`
`a.each{ |x| puts x }`

3. (4 pts) Regular expressions and finite automata

Give a regular expression equivalent to the following finite automaton.



4. (6 pts) Regular expression to NFA

Create a NFA for the regular expression $a(bc)^*$ using construction method from class.

5. (10 pts) NFA to DFA

Apply the subset construction algorithm to convert the following NFA to a DFA. Be sure to list the NFA states represented by each DFA state.

