

Name (PRINTED): _____		
University ID #: _____		
Circle your TA's name:	Guilherme	Nir
Circle your discussion time:	12:00	1:00

CMSC 330

Exam #1

Fall 2006

Do not open this exam until you are told. Read these instructions:

1. This is a closed book exam. **No notes or other aids are allowed.**
2. **You must turn in your exam immediately when time is called at the end.**
3. This exam contains 6 pages, including this one. **Make sure you have all the pages.** Each question's point value is next to its number. **Write your name on the top of all pages before starting the exam.**
4. In order to be eligible for as much partial credit as possible, show all of your work for each problem, and **clearly indicate** your answers. Credit **cannot** be given for illegible answers.
5. If you finish at least 15 minutes early, bring your exam to the front when you are finished; otherwise, wait until the end of the exam to turn it in. Please be as quiet as possible.
6. If you have a question, raise your hand. If you feel an exam question assumes something that is not written, write it down on your exam sheet. Barring some unforeseen error on the exam, however, you shouldn't need to do this at all, so be careful when making assumptions.
7. If you need scratch paper during the exam, please raise your hand. Scratch paper must be turned in with your exam, with your name and ID number written on it. Scratch paper **will not** be graded.
8. Small syntax errors will be ignored in any code you have to write on this exam, as long as the concepts are correct.
9. The Campus Senate has adopted a policy asking students to include the following handwritten statement on each examination and assignment in every course: "*I pledge on my honor that I have not given or received any unauthorized assistance on this examination.*" Therefore, **just before turning in your exam**, you are requested to write this pledge **in full** and **sign it** below:

Good luck!

1	2	3	Total

1. [20 pts.] **Short Answer.**

a. [5 pts.] **Briefly** list one advantage of an interpreter versus a compiler, and one disadvantage.

b. [5 pts.] List the four classes of variables in Ruby.

c. [10 pts.] Suppose in Ruby we set `a = [1,2,3]`. Write Ruby code that copies `a` into variables `b` and `c`. The variable `b` should be a *shallow copy*, and the variable `c` should be a *deep copy*. Your solution should work for any array `a`, not just the particular example above.

2. [50 pts.] **Regular Expressions and Finite Automata.** In your answers to these questions, please stick to the formal notation we showed you in class. If you want to use any other abbreviations, describe precisely what your abbreviations mean.

a. [10 pts.] Write a regular expression that accepts the following language

The set of strings of 0's and 1's that do not contain the sequence 11.

b. [15 pts.] Give a DFA that accepts the string $01(01)^*00$

