CS 375R - Competitive Programming
Course Syllabus
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Instructor: Denis Savenkov
E-mail: dsavenk@emory.edu
Office: Emerson Hall E500
Office hours: by appointment
Web page: http://www.mathcs.emory.edu/~cs375r00/
Class hours: TBD

Description:
Programming competitions are organized worldwide and have a huge popularity. They combine challenges of problem solving with fun of competing with other people. Limited time teaches participants to think faster, code faster and develop problem solving skills, which are of high demand in the industry. Interviews for software developer positions usually includes a big portion of problems similar to those offered on programming competitions.

In this course you will learn and practice algorithmic problem solving. The course will combine theory of algorithms, data structures with practice solving the problems.

Materials:
Suggested resources:
- “Competitive Programming 3” by Steven Halim.
- “Programming Challenges” by S.Skiena and M. Revilla
- http://www.topcoder.com/tc?d1=tutorials&d2=alg_index&module=Static
- http://www.codeforces.com/
- http://code.google.com/codejam
- etc.

Homeworks: You will be assigned 5 homeworks, which will cover different topics we will study during semester. A homework will typically consist of one or more programming problems (depending on the difficulty), which will be similar to what is offered on different programming competitions. For each problem you will need:
- Write a description of your solution (algorithm)
- Prove its correctness
- Provide analysis of space and time complexities
- Code the algorithm and submit it to the automatic judge system

Exams: There will be midterm exam and the final. Both exams will be given as a competitions, where you will need to solve several problems and submit the solution to the judge system.

Grading
- 5 homeworks - 40%
- Participation - 10%
- Midterm - 20%
- Final exam/competition - 30%