CS 70 Discrete Mathematics and Probability Theory
Spring 2011 Demmel HW 6

Due March 4, 6:30pm

Please follow the directions on the first homework (and class web page) about labeling and turning in your homework, and about collaboration.

Special instruction: Leave your answers as an expression rather than trying to evaluate it to get a specific number. Also, note the change in submission deadline (applies only to this homework).

1. **(10 pts.)** **T**here are 199 students enrolled in CS70. How many ways are there to pair them up into 2 student teams, with 1 left over?

2. **(10 pts.)** **L**et $\{(x_i, y_i) : i = 1, 2, 3, 4, 5\}$ be a set of five distinct points in the plane with integer coordinates. Show that the midpoint of the line segment joining at least one pair of these points has integer coordinates.

3. **(10 pts.)** **P**rove that in a class with at least two students, there are two students who know the same number of other students in the class.