CS 3333 Mathematical Foundations Spring '11

Recitation 8 Practiced on: 3/2 5:30 - 6:20 pm

Permutations and Combinations

Note: These problems are designed for practice during a 50 minute recitation.

a) **Easy** problems: expected to be solved in *5 min*.
b) **Medium** problems: expected to be solved in *30 min*.
c) **Hard** problems: expected to be solved in *15 min*.

During the recitation, you may discuss the problems with your peers and the TA. Please control your volume and don't annoy others. An electronic copy of these problems and solutions will be posted on the following URL: http://cs.utsa.edu/~btang/pages/teaching.html.

Questions:

1. (Easy, 2 min) List all the permutations of {a, b, c}. (Textbook [KR] Page 360: 1)
2. (Easy, 3 min) How many permutations of {a, b, c, d, e, f, g} end with a? (Textbook [KR] Page 360: 3)
3. (Medium, 10 min) How many possibilities are there for the win, place, and show (first, second, and third) positions in a horse race with 12 horses if all orders of finish are possible? (Textbook [KR] Page 361: 9)
4. (Medium, 10min) A group contains n men and n women. How many ways are there to arrange these people in a row if the men and women alternate? (Textbook [KR] Page 361: 13)
5. (Medium, 10min) In how many ways can a set of five letters be selected from the English alphabet? (Textbook [KR] Page 361: 15)
6. (Hard, 15 min) How many ways are there for eight men and five women to stand in a line so that no two women stand next to each other? [Hint: First position the men and then consider possible positions for the women.] (Textbook [KR] Page 361: 23)

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