
CS 161

HOMWORK 3

Due in class - 4/8 for Nayeem's section and 4/9 for Asa's

You must explain your answer (which counting principles are used at each step and why). Show the formulas you are using, then substitute the numbers into the formula, then calculate the answer. Hand in to your instructor during lecture.

1. How many bit strings of length 12 contain:
 - (a) exactly three 1s?
 - (b) at most three 1s?
 - (c) at least three 1s?
2. How many subsets with an odd number of elements does a set with 10 elements have?
3. How many permutations of the letters ABCDEF contain the string BCD? Hint: consider this as a two step process—first choosing the position where BCD occurs, and then all possible permutations of the rest of the letters.
4. Thirteen people on a softball team show up for a game.
 - (a) How many ways are there to choose 10 players?
 - (b) How many ways are there to assign the 10 positions by selecting players from the 13 who showed up?
5. Suppose that a department contains 7 men and 9 women. How many ways are there to form a committee with five members if it must have more women than men?
6. How many license plates consisting of three digits followed by three letters where each letter or digit appears at most once?