

**Course:** CS5961/6951  
**Instructor:** R. F. Riesenfeld  
**Date:** 25 Jan 2010  
**Due:** Wed 27 Jan 2010

*Computational Statistics*

Sp 2010

**Assignment 1**     *Combinatorics*

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- A. Suppose one has an ample supply of colored beads and a string, the tools for making a bead necklace.
  - i. Specifying bead color and juxtaposition, and the like, develop some rule(s) for creating a particular style of necklace made with 100 beads. It can have a repeating fundamental pattern.
  - ii. Clearly illustrate a scheme for counting the possible number of distinct necklaces that can be made from an adequate supply of beads and strings. The idea here is to create a nontrivial counting problem, and then present a solution for it.
  
- B. Using a kind of pseudo-code develop and describe an algorithm for creating all the permutations of  $n$  distinct objects. Give an example for some small  $n$  that demonstrates that it works correctly.