

## CSC 231 MIDTERM STUDY GUIDE

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Make sure you understand all the concepts on the week 3 quiz study guide: you will see them again on the midterm.

In addition, be sure you can work all the problems on homeworks 1, 2 and 3: you will see problems on the quiz similar to those.

Be able to do proofs that show that a function  $f$  is Big  $O(g)$  for some other function  $g$ .

Be able to do induction proofs similar to those in the homework assignments and the examples done in class.

Understand the main laws / principles of counting.

Understand the recursive (recurrence relations) for the number of subsets of size  $k$  chosen from a set of size  $n$  (binomial coefficients). Understand the correspondence between subsets of a set of size  $n$  and bit strings of length  $n$ .

Understand the recursive formula for Sterling numbers of the second kind: that is the number of partitions with  $k$  parts of a set of size  $n$ .

Understand the concept of the partitions of an integer, and be able to explain the recursive formula for the number of partitions of an integer.