

# CSCI 303 Algorithms

## Homework 7

Due: 11:00 in class, October 30, 2001

1. (10 points) Determine the time complexity of Heap Sort, Merge Sort, and Quick sort on sorted input, reversely sorted input, and input of identical elements. Assume that in Quick Sort the pivot is the first element of the list to be sorted. You may provide the answers by filling out the following table.

	Sorted	Reversely sorted	Identical
Heap Sort			
Merge Sort			
Quick Sort			

2. Suppose you are given a sorted list of  $n - k$  elements followed by  $k$  randomly order elements. How would you sort the entire list if
- (a) (5 points)  $k = \Theta(1)$ ?
  - (b) (5 points)  $k = \Theta(\log n)$ ?