CS 5300 Advanced Algorithms

HW # 5

1. Illustrate the operation of MAX-HEAP-INSERT(A, 11) on the heap $A = <$ $15, 13, 9, 5, 12, 8, 7, 4, 0, 6, 2, 1 >$
2. Illustrate the operation of HEAP-EXTRACT-MAX on the heap
$$A =< 15, 13, 9, 5, 12, 8, 7, 4, 0, 6, 2, 1 >$$
3. Illustrate the operation of PARTITION on the array $A = <$ $15, 1,9, 5, 13,6, 8, 4, 21, 2, 6, 12 >$
4. Prove that the solution for the recurrence $T(n) = T(n-1) + \Theta(n)$ is $T(n) = \Theta(n^2)$
5. Illustrate the operation of COUNTING-SORT on the array $A = < 5, 0, 2, 0, 2, 3, 4, 6 >$
6. Illustrate the operation of RADIX-SORT on the following list of English words: COW, DOG, SEA, RUG, ROW, MOB, BOX, TAB, BAR, EAR, TAR, DIG, BIG, TEA, NOW, FOX.
7. Illustrate the operation of BUCKET-SORT on the array $A = <$ $0.72, 0.17, 0.19, 0.62, 0.49, 0.20, 0.81, 0.52, 0.61, 0.47, 0.39, 0.59, 0.68, .99, .16 >$