Outline
8.1 Lower Bounds for Sorting
8.2 Counting Sort
8.3 Radix Sort
8.4 Bucket Sort

Overview
Example

Counting Sort - Analysis

COUNTING-SORT(A, B, k)

1: **for** $i = 0$ to k **do**

2:     $C[i] = 0$ //$\Theta(k)$

3: **for** $j = 1$ to $A.length$ **do**

4:     $C[A[j]] = C[A[j]] + 1$ //$\Theta(n)$

5:     //$C[i]$ now contains the number of elements equal to i.

6: **for** $i = 1$ to k **do**

7:     C[i]=C[i]+C[i-1]   //$\Theta(k)$

8:     //$C[i]$ now contains the number of elements less than or equal to i.

9: **for** $j = A.length$ to 1 **do**

10:     $B[C[A[j]]] = A[j]$

11:     $C[A[j]] = C[A[j]] - 1$ //$\Theta(n)$

12: Overall Time: $\Theta(n+k)$; Stable