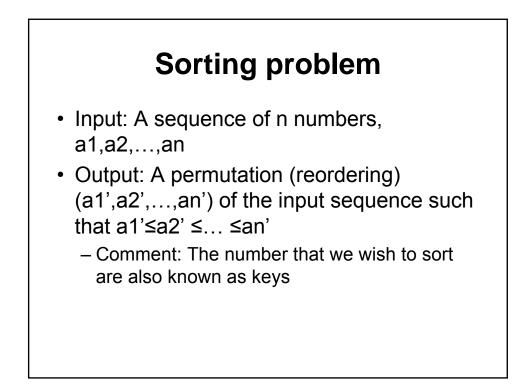
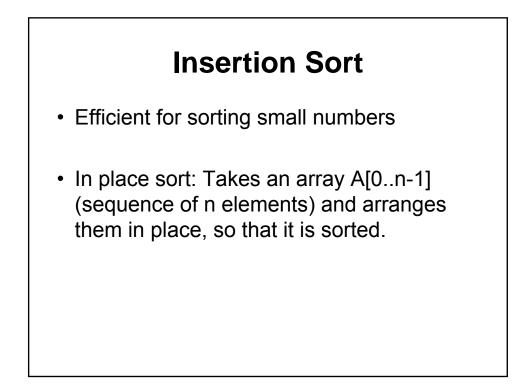
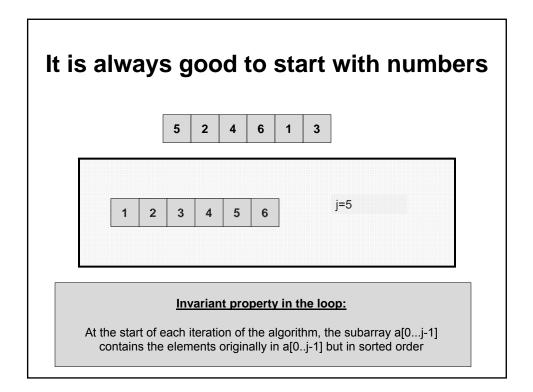
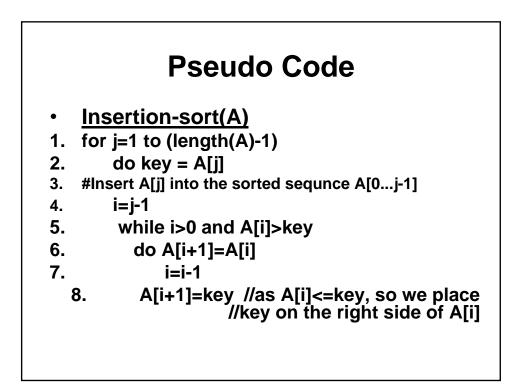
CS11001/CS11002 Programming and Data Structures (PDS) (Theory: 3-1-0)

Analysis of Algorithms



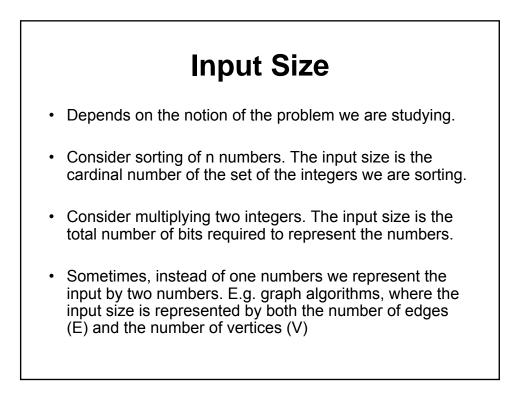






Lets analyze the Insertion sort

- The time taken to sort depends on the fact that we are sorting how many numbers
- Also, the time to sort may change depending upon whether the array is almost sorted (can you see if the array was sorted we had very little job).
- So, we need to define the meaning of the **input size** and **running time**.



Running Time

- Proportional to the Number of primitive operations or steps performed.
- Assume, in the pseudo-code a constant amount of time is required for each line.
- Assume that the ith line requires ci, where ci is a constant.
- There is no concurrency

Steps	Cost	Times
for j=1 to n-1	c_1	n
key=A[j]	c_2	n-1
i=j-1	c ₃	n-1
while i>0 and A[i]>key	c ₄	i-1
do A[i+1]=A[i]	c ₅	$\sum_{j=1}^{n-1} (t_j - 1)$
i=i-1	c ₆	$\sum_{j=1}^{n-1} (t_j - 1)$
A[i+1]=key	c ₇	(n-1)
The total time required is the sum	of that fo	or each statement:

