Insertion sort

Yet another better sort of sort

Insertion sort

- The insertion sort goes through the list from the front and inserts the next element into the already sorted front of list.

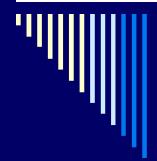- Each check for insertion is called a 'pass'

Insertion Example – Pass 1

- <u>h n</u> a b d   is our list
- compare h n, These are in order

Insertion Example – Pass 2

- h n a b d is our list
- compare n a, need to swap
- h a n b d
- compare h a, need to swap
- Switch a and h.
- h a n b d → a h n b d

Insertion Example – Pass 3

- a h n b d is our list
- compare n b, swap -> a h b n d
- compare h b, swap -> a b h n d
- compare a b , in order
- a b h n d

Insertion Example – Pass 4

- a b h n d is our list

- compare n d, swap a b h d n .

- compare h d, swap a b d h n .

- compare b d, d is correct place now so finished.

Insertion Efficiency

- We want to minimize the number of comparisons and swaps.
- So we count them to see how efficient our sort was.
- In this case, our 3 passes each took 3 for 9 comparisons, and we made 6 swaps.