

### Bubble Sort

Compare each item with the one next to it, if it is greater, swap them

$(9, 5)$  10, 4, 15  
 5, 9, 10, 4, 15  
 5, 9, 10, 4, 15  
 5, 9, 4, 10, 15 1<sup>st</sup> pass

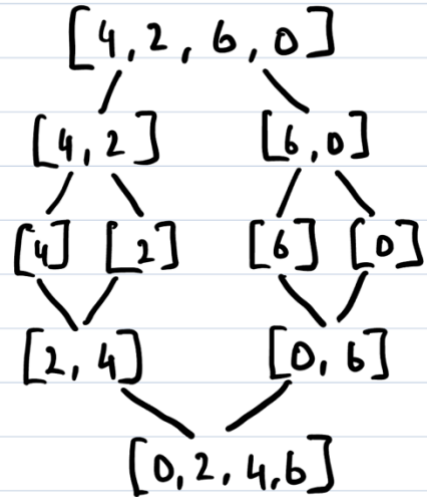
5, 9, 4, 10, 15  
 5, 4, 9, 10, 15 2<sup>nd</sup> pass

4, 5, 9, 10, 15 3<sup>rd</sup> pass

4, 5, 9, 10, 15 4<sup>th</sup> pass ✓

### Merge Sort

Divide the list into halves, till each list is one item long, then merge



### Insertion Sort

First item is in sorted list, the rest in unsorted, compare the first of the unsorted to the sorted and insert in correct position

$[9, 5, 4, 15, 3]$   
 sorted list  $\rightarrow [9]$   $[5, 4, 15, 3]$   $\leftarrow$  unsorted  
 $[5, 9]$   $[4, 15, 3]$   
 $[4, 5, 9]$   $[15, 3]$   
 $[4, 5, 9, 15]$   $[3]$   
 $[3, 4, 5, 9, 15]$

### Quick Sort (A LEVEL only)

First item is the pivot, everything less than goes on the left and greater on the right, and pivot will go in the correct position. Then repeat.

