

CSE 3010 – Data Structures & Algorithms

Lecture #27

What will be covered today

- Introduction to divide and conquer algorithms
- Examples of divide and conquer sorting algorithms
 - Merge Sort
 - Quick Sort

Divide and conquer sorting techniques

```
void divAndConqSort(list) {  
    if (length of list > 1) {  
        Partition list into sublist1, sublist2;  
        Sort(sublist1);  
        Sort(sublist2);  
        Merge(sublist1, sublist2);  
    }  
}
```

- Two major decisions remain
 - How are we going to “partition” the list?
 - How are we going to “merge” the list?

Types of divide and conquer sorting techniques

Divide and Conquer Sorting Technique	Top-Level Algorithm
Quick sort	<ul style="list-style-type: none">• Select a key, called a pivot• Create two sublists – with half before the pivot and half after the pivot• Sort the lists individually• Merge the two sorted sublists
Merge sort	<ul style="list-style-type: none">• Split the original list into two equal-sized sublists• Sort the two sublists separately• Merge the two sorted sublists