Data Structures **Lecture 32**
CS 3613 **Heap Sort**

Heap sort algorithm:

1. Create a heap by inserting the elements, one at a time into an (initially) empty heap. Reverse the heap order property so that order is the parent is larger than or equal to either child.
2. Remove the largest element from the heap successively until the heap is empty. Place the elements removed from the heap in descending order.

Analysis:

1. At worst, $\log_2 N$, operations are required each time an element is inserted in the heap. There are N elements. Creating the heap requires $N \log_2 N$ operations
2. At worst, $\log_2 N$, operations are required each time an element is removed from the heap. There are N elements. Removing N elements from heap requires $N \log_2 N$ operations
1. At worst heap sort requires $2N \log_2 N$ operations.