

CSE310 Lecture 10: **Priority Queues and Order Statistics**

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Topics of this lecture

- Priority Queues
- Order Statics
 - Finding the smallest
 - Finding both the smallest and the largest
 - Finding the smallest and 2nd smallest
 - Finding the kth smallest.

Priority Queues

- A data structure for maintaining a set \underline{S} of elements, each with an associated value called a **key**. A priority queue supports the following operations:

INSERT(S, x): Inserts the element \underline{x} into the set \underline{S} , i.e. it performs the operation $S = S \cup \{x\}$
 $O(\log n)$

MAXIMUM(S): returns the element in \underline{S} with the largest key.
 $O(1)$

EXTRACT-MAX(S): removes and returns the element in \underline{S} with the largest key.
 $O(\log n)$