

Rank

Rank of an element is its position in ascending key order.

[2,6,7,8,10,15,18,20,25,30,35,40]

$$\text{rank}(2) = 0$$

$$\text{rank}(15) = 5$$

$$\text{rank}(20) = 7$$

Selection Problem

- Given n unsorted elements, determine the k 'th smallest element. That is, determine the element whose rank is $k-1$.
- Applications
 - Median score on a test.
 - $k = \text{ceil}(n/2)$.
 - Median salary of Computer Scientists.
 - Identify people whose salary is in the bottom 10%. First find salary at the 10% rank.

Selection By Sorting

- Sort the n elements.
- Pick up the element with desired rank.
- $O(n \log n)$ time.