Section 2
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Insertion and Selection Sort

Insertion and Selection Sort

- Takes $O(n^2)$ time
- Works best with relatively small sets of data
- Searches through an array, comparing two values at a time

Sorting can be performed on any collection of Comparable objects

Insertion Sort

- Will run between O(n²) to O(n) depending on how sorted the initial data is

1. Declares the first value in the list as sorted
2. Takes the first unsorted value and moves it until a suitable position is found
   ($a \leq x \leq b$)
3. Repeats until all values are sorted
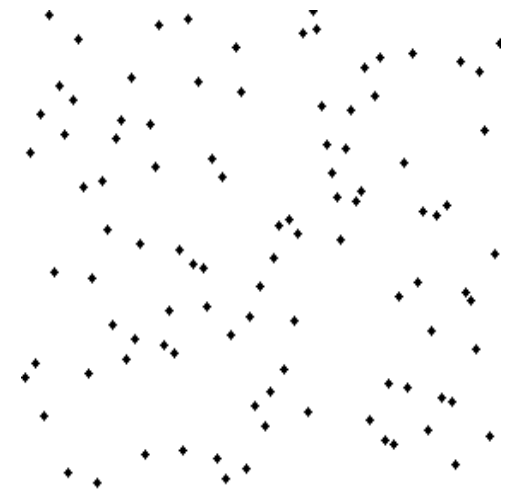
Selection Sort

```
8
5
2
6
9
3
1
4
0
7
```

- Has constant time of $O(n^2)$

1. Find the minimum value in the list
2. Swaps it with the first value
3. Repeat, going from the second position on

Selection Sort Example

64 25 12 22 11

11 25 12 22 64

11 12 25 22 64

11 12 22 25 64

11 12 22 25 64