Design and Analysis of Algorithms

- Insertion sort: Inserting new element in sorted subarray.

  - Size of subarray is 1 for first iteration and $n-1$ for last, where n is size of array.
  - In worst case, $k-1$ shifts will be required.
  - If c is time taken for every shift, time taken will be $c + 2c + \ldots (n-1) * c$
    $= \frac{c*n*(n-1)}{2} \approx cn^2$

- Quicksort has 2 types,

  1. Deterministic: pivot is always first/ last/ some fixed element.
  2. Randomized: pivot is chosen randomly.