Decrease-by-one algorithms: Insertion Sort

- Read 4.1, pages 131-138
  - Describe how in general the "decrease-by-one" and "decrease-by-constant-factor" algorithms work.
  - Describe the main approach to sorting that the **Insertion Sort** algorithm takes. How is this an illustration of the "decrease-by-one" approach?
  - Study the algorithm for InsertionSort.
    - What is the meaning of the index i? Why does it start from 1?
    - What is the meaning of the index j?
    - Explain the condition in the while loop. Why is that the right test?
    - What is the meaning of the assignment A[j+1] <– A[j]?
    - Why do we need the variable v?
  - At intermediate parts of the InsertionSort algorithm, what part of the array, if any, is sorted?
    - Are those values in their final locations?
    - How does that compare with SelectionSort and BubbleSort?
  - Analyze the worst-case and best-case efficiency of InsertionSort. When does the best base occur?
  - Practice problems: 4.1.7, 4.1.8, 4.1.9
  - Challenge: 4.1.11, 4.1.12