

## EC504 Homework Assignment 2 (due October 5 in class)

1. Solve CLRS Exercise 18.2-1 (page 497)
2. Read section 18.3 and then solve CLRS Exercise 18.3-1 (page 502)
3. Solve CLRS Exercise 18.3-2 (page 502)
4. In class we considered vEB trees assuming that there were no duplicate items in the set. How would you modify vEB trees to support duplicates? Describe changes to the data structure and the Insert function (page 553). Does the asymptotic running time of any operation change?
5. Solve CLRS Exercise 19.4-1 (page 526)
6. Execute the following operations on an empty Fibonacci heap:
  - Insert(18)
  - Insert (14)
  - Insert (17)
  - Insert(28)
  - Insert(32)
  - Insert(37)
  - Insert(25)
  - Insert(36)
  - Insert(53)
  - Insert(40)
  - DeleteMin()
  - DecreaseKey(40,30)
  - Delete(36)
  - DeleteMin()

Illustrate the Fibonacci heap at all intermediate steps, as well as the final Fibonacci heap. New elements should be inserted to the right of the current minimum. The consolidation operation starts with the next element on the right hand side of the deleted minimum.