ELE3034 Homework#2

Due at the start of class Nov. 21 (Wed)

Participant No.1:   **Signature:**

Participant No.2:   **Signature:**

Participant No.3:   **Signature:**

Participant No.4:   **Signature:**

**ANY SUSPICIOUS ACADEMIC DISHONEST BEHAVIOR MAY FORFEIT YOUR GRADE. YOU HAVE TWO WEEKS.

1. Implement the branch-and-bound algorithm that solves the 0/1 knapsack problem. You need to implement 3 different versions: depth-first-search, breadth-first-search, and, best-first-search.

2. Check the number of nodes that you need to visit until finding the solution node for the Example 6.1 in the textbook.

3. You should show me the numbers in depth-first, breadth-first, and best-first-searches, respectively.

4. Do the same thing for the example in Exercises #1 in page 281. Again, you need to show me the numbers of three versions, respectively.

5. Make your own sets of problems and do the same experiments as many as you can. Try your best to come up with some interesting numbers that might impress me.

6. Estimate the performance of best-first-search version using Monte Carlo simulation. (Big plus point)

   Followings are the list of preparation for submission.

   - Source listings
   - Experimental results.
   - Discussion, if there are any, especially if you do the Monte Carlo simulation.