Department of Electrical and Computer Engineering
EECE 4542: Advanced Engineering Algorithms

Project #4

In this project, you will implement a branch and bound solution to the knapsack problem.

1. Implement the function `knapsack::bound` that returns an upper bound on the value of objects in an optimal subset. Your bound should be based on the solution to the fractional knapsack problem.
2. Implement a the branch and bound solver `branchAndBound`. Your solution should maintain a list, possibly implemented as a `deque`, of partial solutions to a knapsack instance. Each partial solution should be stored as a separate `knapsack` object. The solver should run for up to 10 minutes per instance.

Turn in your source and output files, and an analysis of your algorithm's performance.