

# CS140 - Group Assignment 5

Due: Friday, 10/11 at 10pm

1. Go over either the longest common subsequence example or the rod cutting example from lecture and make sure everyone understands the steps needed to formulate a dynamic programming solution to a problem.

2. Coins

Given a set of coin denomination  $c_1, c_2, \dots, c_n$  (you may assume they are in ascending order) and a target value  $v$ , determine if it is possible to make  $v$  using the coin denominations. You can assume an infinite number of any given denomination. For example, with denominations 5 and 7, you could make changes for 19, but could not make changes for 13.

First state a recursive solution and then a dynamic programming solution. State the runtime of you DP solution. For the dynamic programming solutions, in addition to the algorithm, make sure to explicitly state:

- What the table looks like (size and range of values).
- How you initialize the table, i.e., any starting values
- How you fill the table in, i.e., what indices you start at and how you proceed.
- Where the final answer is.

3. Optional: submit a group photo :)