

# ADS Homework 11

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## 1 Problem 11.1

Please see the attached file los.cpp.

## 2 Problem 11.2

### 2.1

Please see the attached file sumintri.cpp.

### 2.2

The time complexity or the run time for the brute force method is  $O(n) = 2^n$  whereas the time complexity or the run time for the dynamic programming approach is  $O(n) = n^2$ . So, the dynamic programming approach provides results faster.

### 2.3

A greedy algorithm tries to generate a globally optimum case by combining locally optimal cases. However in this case, we start from the top of the triangle and there is no "best choice" for every local steps because the combination of locally best cases may not create a possible path. We must try different combinations of paths to get the best solution as the direction of the path is limited. Hence, greedy algorithm does not work for this problem.

## 3 Problem 11.3 (Bonus)

Please find the attached file scuba.cpp.