Problem of the Day

- A certain string processing language allows the programmer to break a string into two pieces. Since this involves copying the old string, it costs n units of time to break a string of n characters into two pieces.
- Suppose a programmer wants to break a string into many pieces. The order in which the breaks are made can affect the total amount of time used.
- For example suppose we wish to break a 20 character string after characters 3,8, and 10:
 - If the breaks are made in left-right order, then the first break costs 20 units of time, the second break costs 17 units of time and the third break costs 12 units of time, a total of 49 steps.
 - If the breaks are made in right-left order, the first break costs 20 units of time, the second break costs 10 units of time, and the third break costs 8 units of time, a total of only 38 steps.
- Give a dynamic programming algorithm that, given the list of character positions after which to break, determines the cheapest break cost in O(n³) time.