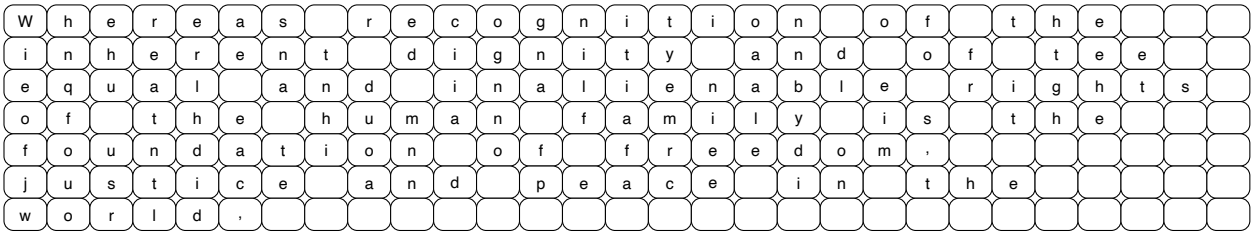
Homework 7

due October 29, 2024

We want to layout a paragraph of text using a fixed-sized font. Each line can hold up to n characters. Words on a line are separated by exactly one blank, even if the word ends in a punctuation symbol. We define the *penalty* for a line to be b^2, where b is the number of blank letters at the end. The penalty of a paragraph is the sum of the line penalties with exception of the last line. For example:



has a total penalty of $3^2 + 2^2 + 1^2 + 3^2 + 7^2 + 5^2$.

Describe in detail a dynamic programming approach to find the minimal-penalty layout of a paragraph. You are given the total number n of characters and the array of words. (If necessary, the words end in a punctuation mark.)