Homework #4
Silhouette Puzzle

In this homework, you have to draw the silhouette of a city block from given viewpoints.

Assume that a data structure holds the heights of the buildings inside the block as shown below:

$$\begin{bmatrix} 7 & 1 & 3 \\ 5 & 4 & 2 \\ 0 & 2 & 1 \end{bmatrix} \quad == \quad$$

The program must calculate the silhouette of the city block from one of the four view points, namely north, south, east and west as illustrated below:

$$\begin{bmatrix} 7 & 1 & 3 \\ 5 & 4 & 2 \\ 0 & 2 & 1 \end{bmatrix}$$

from south view point

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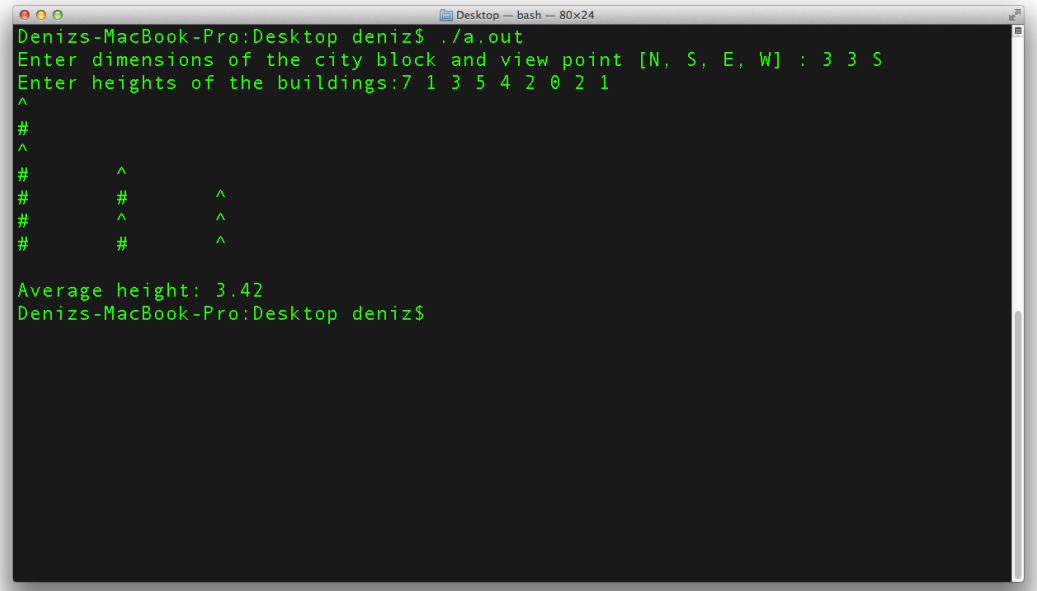
When program starts, user must enter the dimensions of the city block, height of each building inside the block and the viewpoint. User must enter height of each building, starting from the north-west corner of the block and ending at the south-east corner. Please note that the block dimensions can be square or rectangular. The program must draw the silhouette of the block from given viewpoint and must calculate the average height of the buildings which can be seen from given viewpoint. An example screenshot can be seen below.



Important Notes:

1. The data structure which holds heights of the buildings must be allocated dynamically. Use a pointer and dynamically allocate memory in run time. Use appropriate pointer arithmetic to access buildings. Do not use arrays and array index.

2. Plagiarism and any kind of cheating are strictly prohibited. In such a case, a negative grade along with disciplinary penalty will be applied.