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APCS2 pd8
HW02 -- Speaking in Pseudocode
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O(n) Search Algo:

In order to have a linear search algorithm, there must only be one iteration of the matrix. Due to this fact, we can take advantage of the *while* statement. *While* is a continuous linear iteration, so it will be in linear time no matter how many traversals you make, as long as there is no other iteration in the *while* loop, which isn't a problem because you can accomplish the search algo with just conditionals. First, there are two variables: row and col. Row and col are initiated to 0, and these variables will be used as indices. In the while loop, there are 3 conditionals: one that checks if an element at the current index is greater or less than the desired value, and if it is smaller, move to the next index by doing col += 1. If the value at index is smaller than the desired value, and then do col -= 1. However, there will be an && operator that makes sure the variable col is always greater than or equal to 0. If a value causes col to -= 1, but there is no more elements to traverse horizontally, the conditional will do row += 1. After going to the next row, it will continue doing the horizontal value check, until it reaches the last element, which then it will prompt row to += 1 again. This will repeat until the variable row is >= the size of the array, at which the code will return an error.