

R-3.7

The worst case running time of `find2D` is $O(n^2)$. This is seen by examining the worst case where the element x is the very last item in the $n \times n$ array to be examined. In this case, `find2d` calls the algorithm `arrayFind` n times. `arrayFind` will then have to search all n elements for each call until the final call when x is found. Therefore, n comparisons are done for each `arrayFind` call. Since `arrayFind` is called n times, we have $n * n$ operations, or an $O(n^2)$ running time. This is not a linear time algorithm; it is quadratic. If this were a linear time algorithm, the running time would be proportional to its input size.