

Problem 1:

The algorithm finds the square root of the given number. It keeps dividing the upper limit + lower limit //2

till the time the the product of the above operation is equal to the number or lower limit == upper limit -1 condition is met.

Time complexity :

since we are always dividing the UL + Lower limit by 2 the time complexity is $O(\log n)$

Space complexity :

$O(1)$