Write algorithms (pseudo-code) for the following problems:

1. Find the maximum and minimum element in a list of n integer

Step1: create an array of integers , n=size

Step2: Initialize a for loop and iterate the array

Step3: Increment the index in the array

Step4: create 2 variable take the value and check the smaller value using if statement

Step5: create another loop (if condition) check if the element is greater than iterate element

Step6: save maximum element in variable

Step7: display minimum and maximum number

1. Count the number of odd and even numbers in an array of size n.

Step1: initialize an array for integers of n(size) and

2 variables even and odd

Step2: create a loop and iterate the elements

Step3: check the value iterate is divisible by 2

Step4: if yes increment the even by 1 else increment the odd by 1

Step5: print the odd even values

1. Reverse a given array of integers of size n.

Step1: iterate the (for) loop for the length of the array

Step2: start the loop from zero index

Step3: take the element of the index and append it at the end of the array

Step4: after the loop is over print the array

2. A Priori Analysis: For each algorithm above, determine

The time complexity

1. 0(n)
2. 0(n)
3. 0(n)

The space complexity.

1. 0(1)
2. 0(1)
3. 0(n)

Discuss whether the algorithm is optimal or can be improved.

1. Optimal
2. Optimal
3. Can be improved and reduced to one loop

3. Given the following code snippet, determine its time complexity and justify your answer:

1. for (int i = 0; i < n; i++) {

for (int j = 0; j < n; j++) {

printf("\*");

}

}