# Data Structures Algorithms And Complexity Homework

Task 1:

The complexity of the algorithm is n2. That is because firstly you go through the whole array and on each step you go through the array once again. So the complexity is n\*n = n2. So if n < 1 000, the speed should be <1s and if its < 10 000 the speed would be ~2s. With n ~ 100 000 the runtime is ~ 3-4 min.

Task 2:

The complexity of the algorithm is < n\*m, because first we go through every row of the matrix and if the first element of the row is even number we go through the whole row. So the speed should be less than the values given for O (n2) depending on the count of even numbers in the first column of the matrix.

Task 3:

There is a bug in the code. If n != m the program will throw an exception. So if n == m then we can assume that the matrix is with size n x n. So the complexity of the program will be n2, because we go through the whole matrix. We sum every element using recursion. So the runtime will be with the values for 0 (n2).