# **Lab 4**

1. a)

Selection Sort:

Int array

If i >= A size - 1

Return;

int min = i

for j = i+1 to j < N do

if A[i] < A[min]

min = j;

temp = A[min]

A[min]=A[i]

A[i] = temp

Return (array, min + 1);

I used the recursive version of the algorithm to improve its efficient of the algorithm. The function will only be called if need be.

B)

Bubble sort:

for i = 0 to i < N-1 do

If sorted=false

for j = 0 to j < N-1 do

if A[j] > A[j+1]

temp = A[j]

A[j] = A[j+1]

A[j+1] = temp

Is sorted=true

Else

If(! Sorted)

brake

If the numbers in this array are unsorted the algorithm

Execute otherwise the code will just run straight through

as the array is already sorted.

1. The Big O for the GCD is- O(n) due to the fact that there is only one loop.

The Big O for the Tree diagram- O(n^2) in this algorithm there are multiple loops that are happening.

The Big O for Rock, Paper Scissors- O(1) there are no loops occurring here therefore the algorithm just runs all the way through.