Assignment 1

Name:- Apurv Aglawe

Email:- itsmyidapurv@gmail.com

Question 1
What is the time, space complexity of following code:
```
int a = 0, b = 0;
for (i = 0; i < N; i++) {
a = a + 1;
}
for (j = 0; j < M; j++) {
b = b + j;
}
```
Solution:-

For the first loop the worst case time complexity would be O(N) and for second loop the worst case time complexity would be O(M) thus the time complexity for the whole program would be O(N + M).
As no the is no more space being utilized the space complexity is constant O(1)

Question 2
What does it mean when we say that an algorithm X is asymptotically more efficient than Y?
a) X will be a better choice for all inputs
b) X will be a better choice for all inputs except possibly small inputs
c) X will be a better choice for all inputs except possibly large inputs
d) Y will be a better choice for small inputs
Solution:-

b) X will be a better choice for all inputs except possibly small inputs

As x is asymptotically more efficient than y, it will take less time for all inputs n for n>0.