Assignment 1 | 18th January 2021

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;
}
```

Answer:- Max(o(n),o(m))-If N is greater then O(n) else O(m).

Explanation:- Time complexity of a loop is considered as O(n) if the loop variables is incremented/ decremented by a constant amount.

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

Answer:-B X will be a better choice for all inputs except possibly small inputs.

In asymptotic analysis we consider growth of algorithm in terms of input size. An algorithm X is said to be asymptotically better than Y if X takes smaller time than y for all input sizes n larger than a value n0 where n0 > 0.