​**Data Structures and Algorithm | FEB 2021 B1**

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**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;

}

Ans:

**Space complexity:** Here no additional space is no required so the space complexity is O(1)…

**Time complexity:**

For time complexity, here 1st loop is O(N) and the 2nd loop is O(M).

For both we don’t know the value of N and M so we take Max(N) and Max(M)…

Now the time complexity is O(Max(N+M))

**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

Ans:

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

**Question 3**

Write a Python program to print even numbers in a list.

Sample:

Input: list1 = [12, 3, 55, 6, 144]

Output: [12, 6, 144]

Input: list2 = [2, 10, 9, 37]

Output: [2, 10]

Ans:

number=[12, 3, 55, 6, 144]

for n in number:

if n%2==0:

print(n,end=" ")