1.) Find the time complexity for the following scenarios

a.)
```
for(i=1;i<=n;i++)
    for(j=i;i<=n;j++)
        printf("Hi");
```

b.)
```
for(i=1;i<=n;i*=3)
    for(j=1;i<=n;j++)
        printf("Hello");
```

SOLUTION :

a) Time complexity is number of instructions executed in the program. There are two loops in the program. Outer loop will iterate from i=0 to i=n-1 i.e., "n" times. In the same way, as inner loop is also having same number of iterations, it will also run for "n" times.

So, the time complexity will be O(n^2).

b) The number of times we can triple a number till it is less than "n" would be log(n) times.
So, j would run for log(n) times.
i runs for n/3 steps
Total steps = O(n/3*log(n)) = O(n*log(n))

So, the time complexity will be O(n*log(n)).