TIME COMPLEXITY SOLUTIONS

Solution :

a. Option A -> Time complexity = O(n*logn)

In the loop, j keeps doubling till it is less than or equal to n. Several times, we can double a number till it is less than n would be log(n).

Let's take the examples here.

for n = 16, j = 2, 4, 8, 16

for n = 32, j = 2, 4, 8, 16, 32

So, j would run for O(log n) steps.

i runs for n/2 steps.

So, total steps = O(n/ 2 * log (n)) = O(n*logn)

b. Option C -> Time complexity = O(logkn)

Because loops for the kn-1 times, so after taking log it becomes logkn.

c. Option B. -> false

The Big-O notation provides an asymptotic comparison in the running time of algorithms. For n < n0, algorithm A might run faster than algorithm B, for instance.

d. Time complexity - O(√n)
Space complexity - O(1)

e. Time complexity - O(n^2)
Space complexity - O(1)