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)

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