

24/01/2024

DAA Assignment-2

- (1) $O(n^3)$, because it is a dominant term determined by convolution step. Hence it will only be most accurate, consider complexity for this process.
- (3) ^{2nd} ~~Find~~ opt: $h(n)$ is $O(g(n))$ but $h(n)$ is not $O(g(n))$ because here, as we can see $g(n)$ is the dominant term due to presence of $O(n^4)$ term, hence, it is clear if $h(n)$ is $O(g(n))$ then it has to be of order of $O(n^4)$.
So, $h(n)$ with 3 loop can be n^4 order.
- (4) 52 times it is getting compared.
- (5) 1st one: $T(n)$ is $O(n^2 \log n)$, Here as we know Big O notation is about finding upper bound but $T(n) = O(n^2 \sqrt{n})$ is a term which cannot be bounded by $n^2 \log n$,
like $n = 100$
 \rightarrow So, $T(n) = O(n^2 \sqrt{n}) = 100000$
but $T(n) = O(n^2 \log n) = 10000 \times 2 = 20000$
Hence,
 $T(n)$ is $O(n^2 \log n)$ is false.
- (2) As we can see the input patterns with multiplication of 10, Hence logarithmic $O(\log n)$ complexity wouldn't exhibit such drastic increase with moderate input size, and out of $O(n^2)$ and $O(n^3)$ $O(n^3)$ is the worst case time complexity. Hence third one $O(n^3)$ is the most suitable ans.

Teacher's Signature _____