









Time and Space Complexity - Revision

Number of questions: 10 Questions

To Question

Test Date:

Dec 30, 2022

Your Score:

21/26

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Question 1/10
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Consider the following two functions. What are the time complexities of the functions?

int fun1(int n)
{

if (n <= 1) return n;

return 2*fun1(n-1);
}

int fun2(int n)
{

if (n <= 1) return n;

return fun2(n-1) + fun2(n-1);
}

O(2^n) for both fun1() and fun2()

O(2^n) for fun1() and O(n) for fun2()

O(n) for both fun1() and fun2()
```

Question 2/10

The minimum number of comparisons required to find the minimum and the maximum of

100 numbers is ______

145.1 to 146.1

140 to 146

140 to 147

Question 3/10

The increasing order of following functions in terms of asymptotic complexity is:

 $f1(n) = n^{0.999999} \log n$ f2(n) = 10000000n $f3(n) = 10000000^{n}$ $f4(n) = n^{2}$ f1(n); f4(n); f2(n); f3(n)

f1(n); f2(n); f3(n); f4(n)

f2(n); f1(n); f4(n); f3(n)

f1(n); f2(n); f4(n); f3(n)

Question 4/10

Consider equality:

 $\sum_{i=0}^{n} i^3 = X$

and the following choices for X:

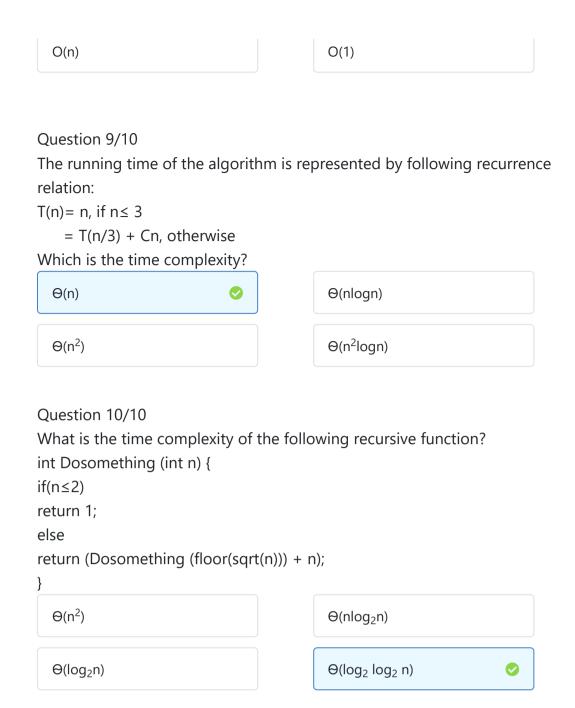
I. ⊖(n⁴)

II. ⊖(n⁵)

III. $O(n^5)$

IV. $\Omega(n^3)$

| | | | Only II | |
|--|--------------------------------|-----------|--|------|
| I or III or IV but not II | ⊘ | | II or III or IV but not I | |
| Question 5/10 Which of the given optic complexity of functions f1, f2, f3 and f2 f1(n) = 2^n f2(n) = n^(3/2) f3(n) = nLogn | - | vides the | e increasing order of as | sym |
| f4(n) = n^(Logn) f3, f2, f4, f1 | 8 | | f3, f2, f1, f4 | |
| f2, f3, f1, f4 | | | f2, f3, f4, f1 | |
| $g(n) = 2\sqrt{x} \log 2n$ h(n) = n! Which of the following is h(n) is $O(f(n))$ | s true? | | h(n) is O(g(n)) | |
| g(n) is not O(f(n)) | | | f(n) is O(g(n)) | |
| given integer to obtain | | | ent for reversing the dig | gits |
| Consider the following p given integer to obtain a new integer. Let n = Daint n, rev; rev = 0; while (n > 0) { rev = rev*10 + n%10; n = n/10; } | ₁ D ₂ Dr | m | | gits |
| given integer to obtain a new integer. Let n = Di int n, rev; rev = 0; while (n > 0) { rev = rev*10 + n%10; n = n/10; | ₁ D ₂ Dr | m | | |
| given integer to obtain a new integer. Let $n = D$ int n , rev; rev = 0; while $(n > 0)$ { rev = rev*10 + n%10; n = n/10; } The loop invariant condi $n = D_1D_2Dm$ -i and rev | tion at | m | of the ith iteration is: $n = Dm-i+1D_{m-1}Dm$ a | nd ı |
| given integer to obtain a new integer. Let n = Dint n, rev; rev = 0; while (n > 0) { rev = rev*10 + n%10; n = n/10; } The loop invariant condi n = D ₁ D ₂ Dm-i and rev = DmDm-1Dm-i+1 | tion at | the end | of the ith iteration is: $n = Dm-i+1D_{m-1}Dm a$ $= D_{m-1}D_2D_1$ $n = D_1D_2Dm and rev$ $DmD_{m-1}D_2D_1$ | nd |













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