

## Unit 4 - Week 2

## Course outline

How does an NPTEL online course work?

## Week 0

## Week 1

## Week 2

- Lecture 6: The Master Method
- Lecture 7: Divide-and-Conquer
- Lecture 8: Divide-and-Conquer (Contd..)
- Lecture 9: Straseen's Algorithms
- Lecture 10: QuickSort
- Week 2: Lecture note
- Quiz : Assignment 2
- Week 2 Feedback Form

## Week 3

## Week 4

## Week 5

## Week 6

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## Week 11

## Week 12

Details Solution

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Text Transcripts

## Assignment 2

The due date for submitting this assignment has passed.  
As per our records you have not submitted this assignment.

Due on 2020-02-12, 23:59 IST.

Choose the most appropriate option.

- 1) Solve the following recurrence using Masters theorem,  $T(n) = 0.7T(\frac{n}{2}) + \frac{1}{n}$
- (a)  $T(n) = \mathcal{O}(n)$
- (b)  $T(n) = \mathcal{O}(\log n)$
- (c)  $T(n) = \mathcal{O}(n^2 \log n)$
- (d) cannot be solved using masters theorem

- a.
- b.
- c.
- d.

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
d.

1 point

- 2) Solve the recurrence by master method

$$T(n) = T(\sqrt{n}) + 1$$

- (a)  $T(n) = \Theta(\log \log n)$
- (b)  $T(n) = \Theta(\log n)$
- (c)  $T(n) = \Theta(\sqrt{n})$
- (d) None of these.

- a.
- b.
- c.
- d.

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
a.

1 point

- 3) Consider a situation where you don't have function to calculate power (pow()) function in C and you need to calculate  $x^n$  where x number and n can be any positive integer. What can be the best possible time complexity of your power function?

- (a)  $\mathcal{O}(n)$
- (b)  $\mathcal{O}(n \log n)$
- (c)  $\mathcal{O}(\log \log n)$
- (d)  $\mathcal{O}(\log n)$

- a.
- b.
- c.
- d.

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
d.

1 point

- 4) Under what case of Masters theorem will the recurrence relation of merge sort fall?

- (a) 1<sup>st</sup> case
- (b) 2<sup>nd</sup> case
- (c) 3<sup>rd</sup> case
- (d) It cannot be solved using masters theorem

- a.
- b.
- c.
- d.

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
b.

1 point

- 5) Which of the following is not an advantage of Fibonacci Search?

- (a) When the element being searched for has a non uniform access storage
- (b) Can be used in magnetic tapes
- (c) Can be used for large arrays which do not fit in the CPU cache or in the RAM
- (d) It can be applied efficiently on unsorted arrays

- a.
- b.
- c.
- d.

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
d.

1 point

- 6) Which of the following are the steps for Divide and Conquer method?

- (a) only Divide and Conquer
- (b) only divide and combine
- (c) only combine and conquer
- (d) all divide, conquer and combine

- a.
- b.
- c.
- d.

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
d.

1 point

- 7) Navie matrix multiplication of two  $n \times n$  matrices have running time

- (a)  $\theta(n)$
- (b)  $\theta(n^2)$
- (c)  $\theta(n^3)$
- (d)  $\theta(1)$

- a.
- b.
- c.
- d.

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
c.

1 point

- 8) If  $T(n) = T(n/4) + T(n/2) + n^2$ , then using recursion tree method

- (a)  $T(n) = \theta(n)$ .
- (b)  $T(n) = \theta(n^2)$ .
- (c)  $T(N) = \theta(n^3)$ .
- (d) None of the above

- a.
- b.
- c.
- d.

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
b.

1 point

- 9) Recurrence relation for binary search

- (a)  $T(n) = 2T(n/2) + \theta(1)$
- (b)  $T(n) = T(n/2) + \theta(1)$
- (c)  $T(n) = 2T(n/2) + \theta(n)$
- (d)  $T(n) = 2T(n/2) + \theta(n^2)$

- a.
- b.
- c.
- d.

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
b.

1 point

- 10) Strassens algorithm needs . . . . . many multiplications to multiply two  $(2 \times 2)$  matrices

- (a) 8
- (b) 9
- (c) 7
- (d) 3

- a.
- b.
- c.
- d.

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
c.

1 point