

Started on	Saturday, 9 March 2024, 1:07 PM
State	Finished
Completed on	Saturday, 9 March 2024, 1:14 PM
Time taken	6 mins 18 secs
Marks	6.00/6.00
Grade	10.00 out of 10.00 (100%)

Question 1

Correct

Mark 1.00 out of 1.00

What is the worst-time complexity of Heapsort operation?

- ☐ a. $O(n \log(n))$
- ☐ b. $O(n)$
- ☒ c. $O(\log(n))$ ✓
- ☐ d. $O(n^2)$

The correct answer is: $O(\log(n))$

Question 2

Correct

Mark 1.00 out of 1.00

Which of the following is the recurrence relation for Heapify Operation?

- ☐ a. $T(n) \leq T(n/2) + \Theta(1)$
- ☒ b. $T(n) \leq T(2n/3) + \Theta(1)$ ✓
- ☐ c. $T(n) \leq T(3n/2) + \Theta(1)$
- ☐ d. $T(n) \leq T(2n/3) + \Theta(n)$

The correct answer is:

$$T(n) \leq T(2n/3) + \Theta(1)$$

Question 3

Correct

Mark 1.00 out of 1.00

What is the worst-time complexity of HEAPIFY operation?

- ☒ a. $O(\log(n))$ ✓
- ☐ b. $O(n \log(n))$
- ☐ c. $O(n^2)$
- ☐ d. $O(n)$

The correct answer is: $O(\log(n))$

Question 4

Correct

Mark 1.00 out of 1.00

Which of the following sorting algorithms has the **least** worst-case running time?

- ☒ a. Merge Sort ✓
- ☐ b. Bubble Sort
- ☒ c. Heapsort ✓
- ☐ d. Insertion Sort

The correct answers are: Merge Sort, Heapsort

Question 5

Correct

Mark 1.00 out of 1.00

Heap property for max-heap is
 $x.Parent \leq x$

Select one:

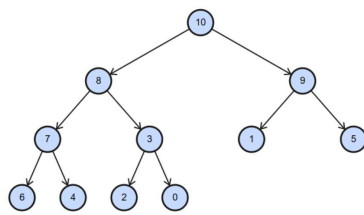
- ☐ True
- ☒ False ✓

The correct answer is 'False'.

Question 6

Correct

Mark 1.00 out of 1.00



This is a max-heap. What would be the top node value be after HEAP-EXTRACT operation?

(Please provide the answer in digits)

Answer:



Top node is **always** the maximum value.
After 10 is extracted, 9 is the max.

The correct answer is: 9