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Section 1: Basic Data Structures (5 questions)

Question 1

1/1 point (graded)

What is the time to access an element by its position in an array of size n ?☐ $O(n)$ ☒ $O(1)$ ✓☐ $O(\log n)$ ☐ $O(\sqrt{n})$

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You have used 1 of 1 attempt

Question 2

1/1 point (graded)

What is the time to access an element by its position in a doubly-linked list of size n ?☒ $O(n)$ ✓☐ $O(1)$ ☐ $O(\log n)$ ☐ $O(\sqrt{n})$

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You have used 1 of 1 attempt

Question 3

1/1 point (graded)

Recall that operation **Push**(x) adds element x on top of the stack and operation **Pop**(x) returns the value of the top element of the stack and removes it from the stack. Determine the output of the following program starting from an empty stack:

```
Push(1)
Push(3)
Push(2)
print(Pop())
Push(4)
print(Pop())
print(Pop())
print(Pop())
```

Output the answer as a sequence of integers separated by spaces. Every two successive integers should be separated by exactly one space. This is an example of a correctly formatted answer (but the answer itself is incorrect):

5 6 7 8

2 4 3 1



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You have used 1 of 1 attempt

Question 4

1/1 point (graded)

Recall that operation ***PushBack(x)*** adds element ***x*** to the end of the queue and operation ***PopFront(x)*** returns the value of the first element of the queue and removes it from the queue. Determine the output of the following program starting from an empty queue:

```
PushBack(1)  
PushBack(3)  
PushBack(2)  
print(PopFront())  
PushBack(4)  
print(PopFront())  
print(PopFront())  
print(PopFront())
```

Output the answer as a sequence of integers separated by spaces. Every two successive integers should be separated by exactly one space. This is an example of a correctly formatted answer (but the answer itself is incorrect):

5 6 7 8

1 3 2 4



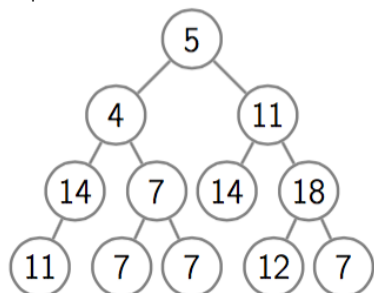
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You have used 1 of 1 attempt

Question 5

1/1 point (graded)

Output the in-order traversal of the following tree:



Output the answer as a sequence of integers separated by spaces. Every two successive integers should be separated by exactly one space. This is an example of a correctly formatted answer (but the answer itself is incorrect):

5 6 7 8

11 14 4 7 7 7 5 14 11 12 18 7



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You have used 1 of 1 attempt