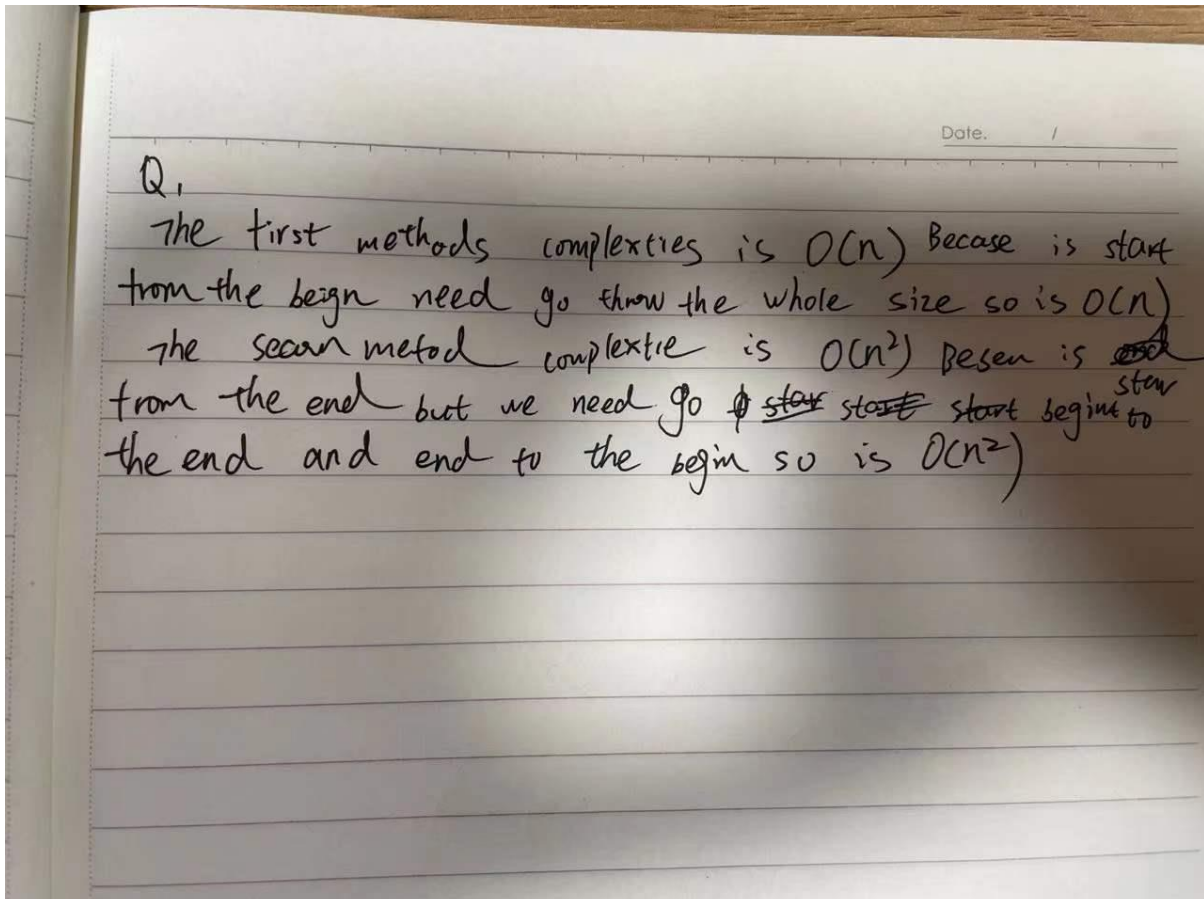


ID 2335100

Exam for Data Structures & Algorithms

Question 1

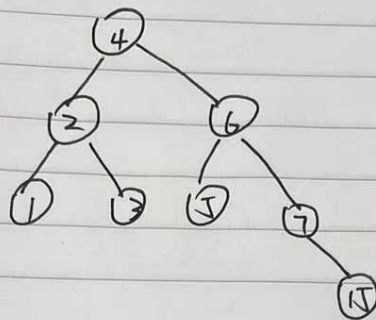


```
void delete_all(){  
    first.next = END  
    return;  
}
```

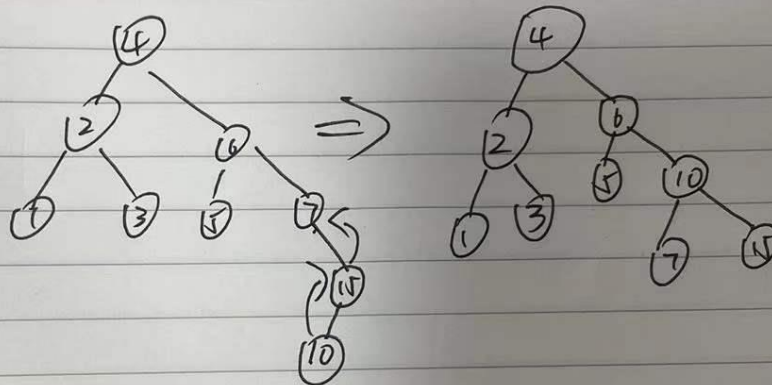
Question 2

```
public static void printTree(BTNode root) {  
  
    TreeNode left;  
    TreeNode Right;  
  
    boolean isleaf(){  
        return  
    }  
    if (root == null) {  
        return 0 ;  
    }  
    Stack<TreeNode> stack = new Stack<>();  
    stack.push(root);  
  
    while (!stack.isEmpty()) {  
        TreeNode node = stack.pop();  
  
        if (node.left != null) {  
            stack.add(node.left);  
        }  
        if (node.right != null) {  
            stack.add(node.right);  
        }  
    }  
}
```

Q₂
b)



Insert new value 10



Q3

(a) i) Linear Probing

$$A \frac{11}{8} = 3$$

$$B = 1$$

$$C = 1$$

$$D = 1$$

$$E = 0$$

$$F = 1$$

0	1	2	3	4	5	6	7
E	B	C	A	D	F		

(ii) Double hashing

$$A \frac{11}{8} = 3$$

$$B 1+3 = 4$$

$$C 1+7 = 1$$

$$D 1+1 = 2$$

$$E = 0$$

$$F = 6$$

0	1	2	3	4	5	6	7
E	C	D	A	B	F		

Date: / /

(b)

	A	B	C	D	E	Finished
0. A	∞	∞	∞	∞	∞	
0. A ✓	3	∞	∞	1	∞	A
0. A ✓	3	6	∞	1	4	D
0. A ✓	3	7	∞	1	4	B
0. A ✓	3	7	1	1	4	C
0. A ✓	3	7	1	1	12	E

A → D → B → C → E

```

graph TD
    A ---|3| B
    A ---|1| D
    B ---|4| C
    B ---|2| D
    C ---|5| D
    C ---|5| E
    D ---|3| E
  
```

Do not write below this line

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By submitting this assignment, I understand that I am agreeing to the following statement of good academic conduct:

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- I confirm that this work is not copied from any other person's work (published or unpublished), web site, book or other source, and has not previously been submitted for assessment either at the University of Birmingham or elsewhere.
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