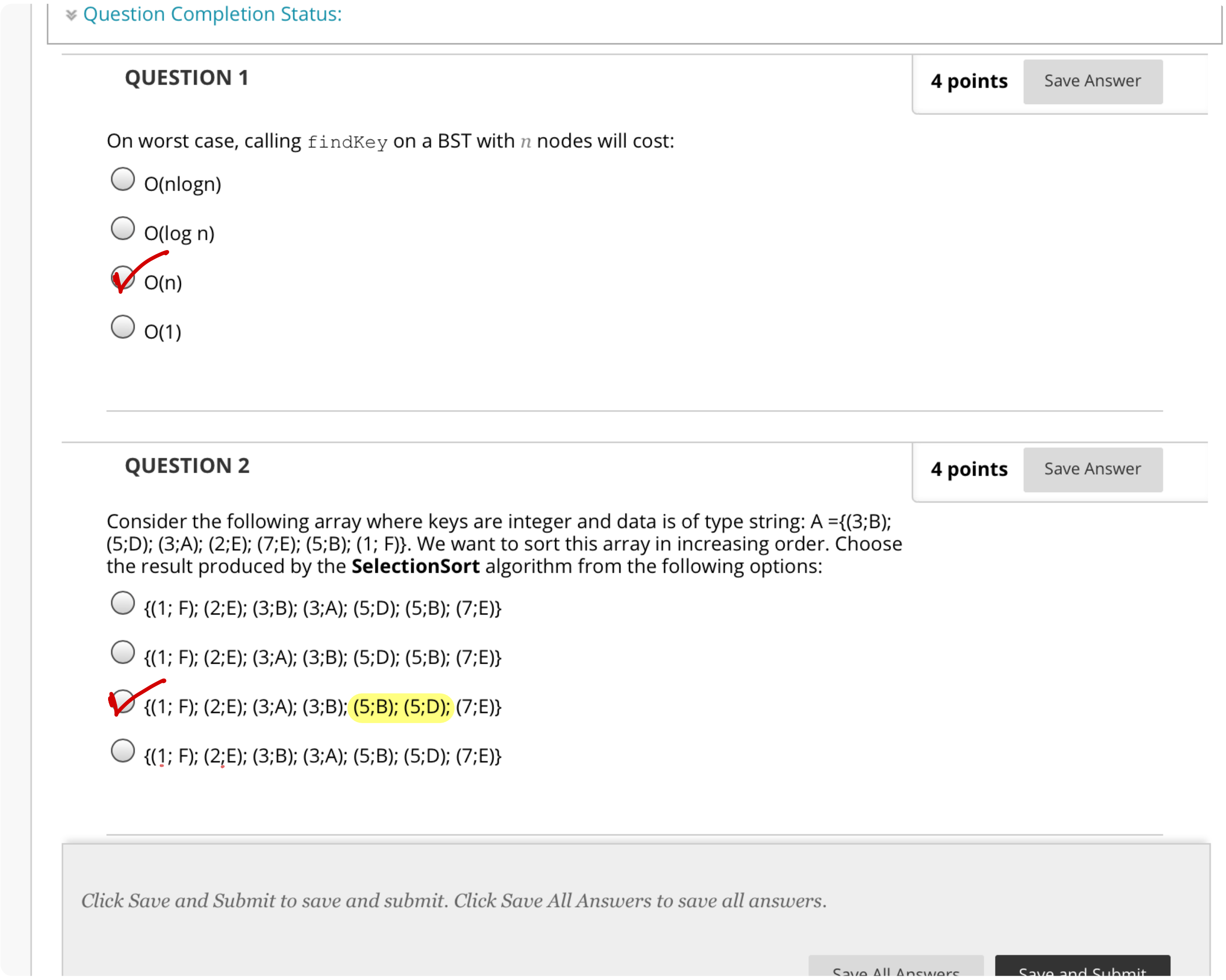


Question Completion Status:

QUESTION 1

4 points Save Answer

On worst case, calling `findKey` on a BST with n nodes will cost:

○ O(nlogn)

○ O(log n)

✓ O(n)

○ O(1)

QUESTION 2

4 points Save Answer

Consider the following array where keys are integer and data is of type string: A ={(3;B); (5;D); (3;A); (2;E); (7;E); (5;B); (1; F)}. We want to sort this array in increasing order. Choose the result produced by the **SelectionSort** algorithm from the following options:

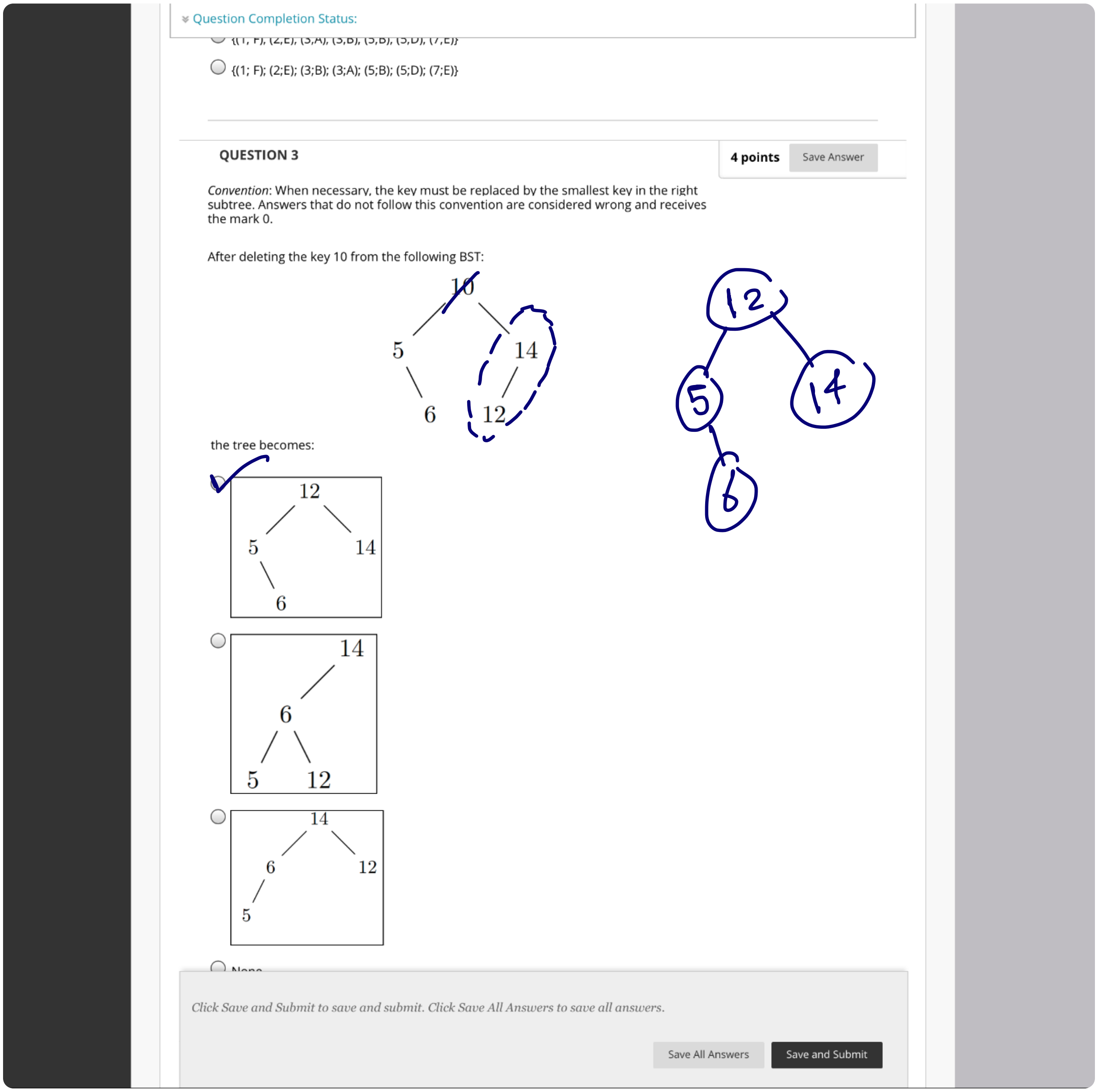
○ {(1; F); (2;E); (3;B); (3;A); (5;D); (5;B); (7;E)}

○ {(1; F); (2;E); (3;A); (3;B); (5;D); (5;B); (7;E)}

✓ {(1; F); (2;E); (3;A); (3;B); (5;B); (5;D); (7;E)}

○ {(1; F); (2;E); (3;B); (3;A); (5;B); (5;D); (7;E)}

Click Save and Submit to save and submit. Click Save All Answers to save all answers.



Question Completion Status:

○ {(1; F); (2;E); (3;A); (3;B); (5;B); (5;D); (7;E)}

○ {(1; F); (2;E); (3;B); (3;A); (5;B); (5;D); (7;E)}

QUESTION 3

4 points Save Answer

Convention: When necessary, the key must be replaced by the smallest key in the right subtree. Answers that do not follow this convention are considered wrong and receives the mark 0.

After deleting the key 10 from the following BST:

the tree becomes:

[✓ ○]

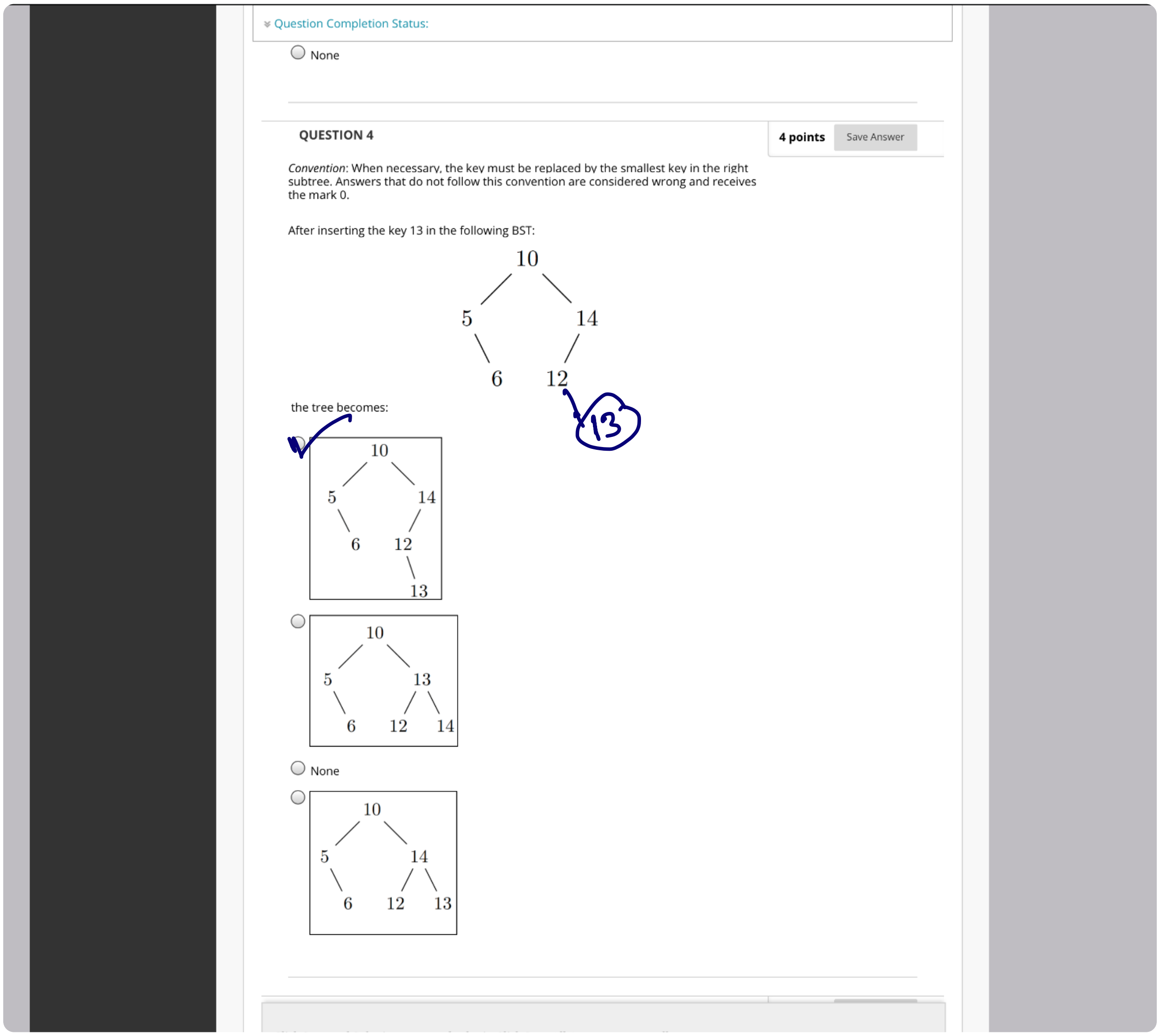
○

○

○ None

Click Save and Submit to save and submit. Click Save All Answers to save all answers.

Save All Answers   Save and Submit



Question Completion Status:

○ None

QUESTION 4

4 points Save Answer

Convention: When necessary, the key must be replaced by the smallest key in the right subtree. Answers that do not follow this convention are considered wrong and receives the mark 0.

After inserting the key 13 in the following BST:

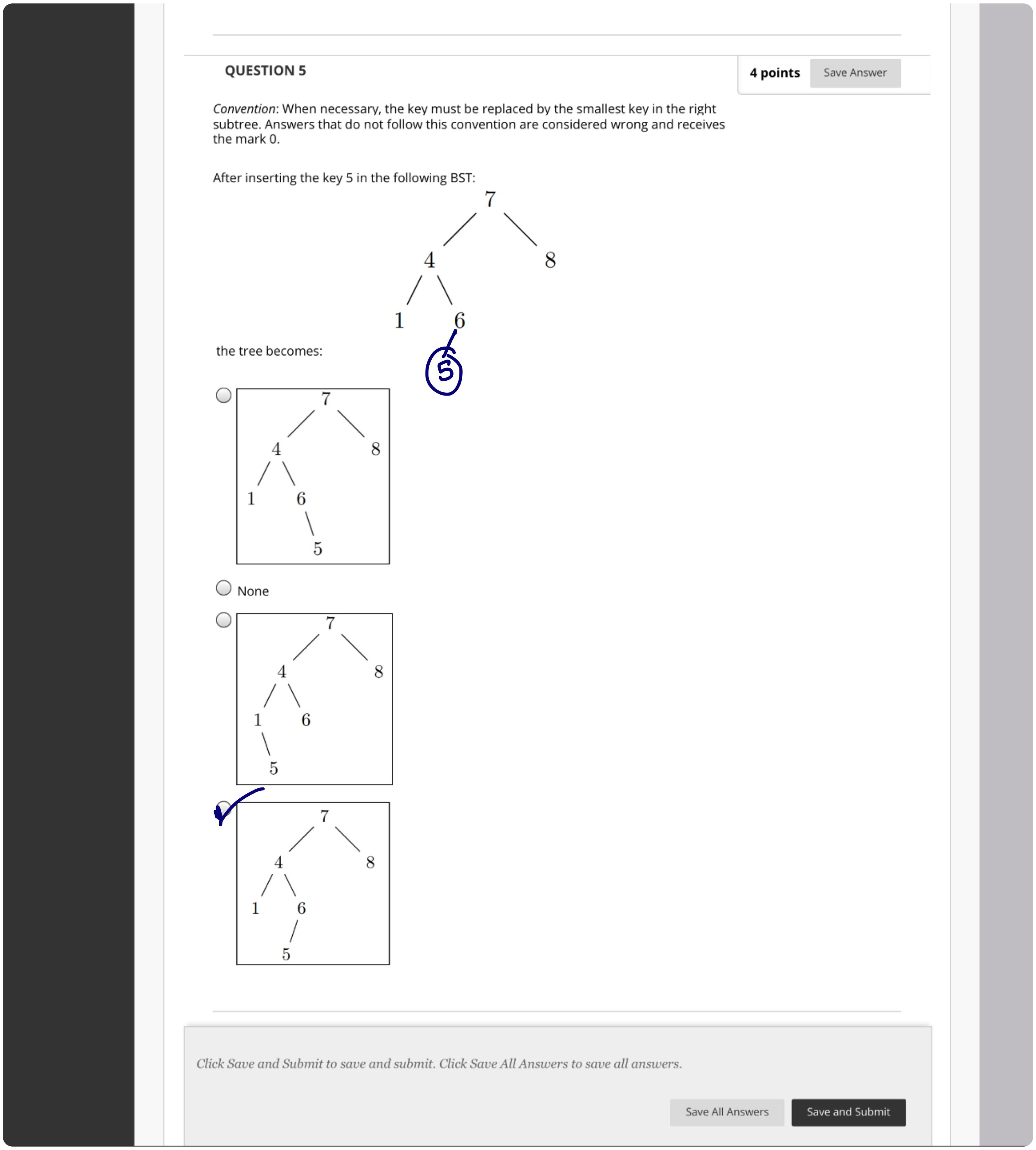
the tree becomes:

[✓ ○]

○

○ None

○



QUESTION 5

4 points Save Answer

Convention: When necessary, the key must be replaced by the smallest key in the right subtree. Answers that do not follow this convention are considered wrong and receives the mark 0.

After inserting the key 5 in the following BST:

the tree becomes:

○

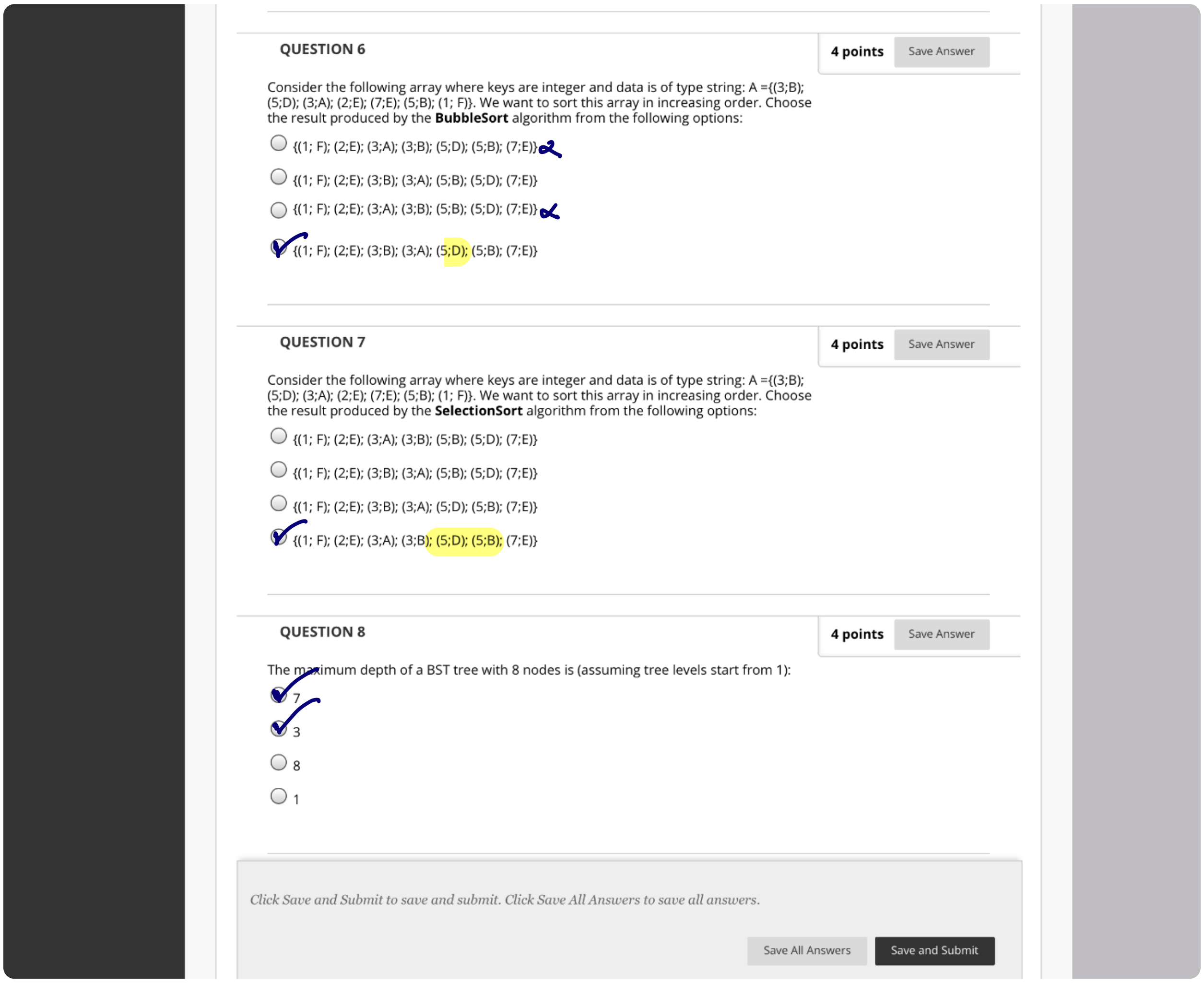
○ None

○

[✓ ○]

Click Save and Submit to save and submit. Click Save All Answers to save all answers.

Save All Answers Save and Submit



QUESTION 6

4 points Save Answer

Consider the following array where keys are integer and data is of type string: A ={(3;B); (5;D); (3;A); (2;E); (7;E); (5;B); (1; F)}. We want to sort this array in increasing order. Choose the result produced by the **BubbleSort** algorithm from the following options:

○ {(1; F); (2;E); (3;A); (3;B); (5;D); (5;B); (7;E)} ✗

○ {(1; F); (2;E); (3;B); (3;A); (5;B); (5;D); (7;E)}

○ {(1; F); (2;E); (3;A); (3;B); (5;B); (5;D); (7;E)} ✗

✓ {(1; F); (2;E); (3;B); (3;A); (5;D); (5;B); (7;E)}

QUESTION 7

4 points Save Answer

Consider the following array where keys are integer and data is of type string: A ={(3;B); (5;D); (3;A); (2;E); (7;E); (5;B); (1; F)}. We want to sort this array in increasing order. Choose the result produced by the **SelectionSort** algorithm from the following options:

○ {(1; F); (2;E); (3;A); (3;B); (5;B); (5;D); (7;E)}

○ {(1; F); (2;E); (3;B); (3;A); (5;B); (5;D); (7;E)}

○ {(1; F); (2;E); (3;B); (3;A); (5;D); (5;B); (7;E)}

✓ {(1; F); (2;E); (3;A); (3;B); (5;D); (5;B); (7;E)}

QUESTION 8

4 points Save Answer

The maximum depth of a BST tree with 8 nodes is (assuming tree levels start from 1):

✓ 7

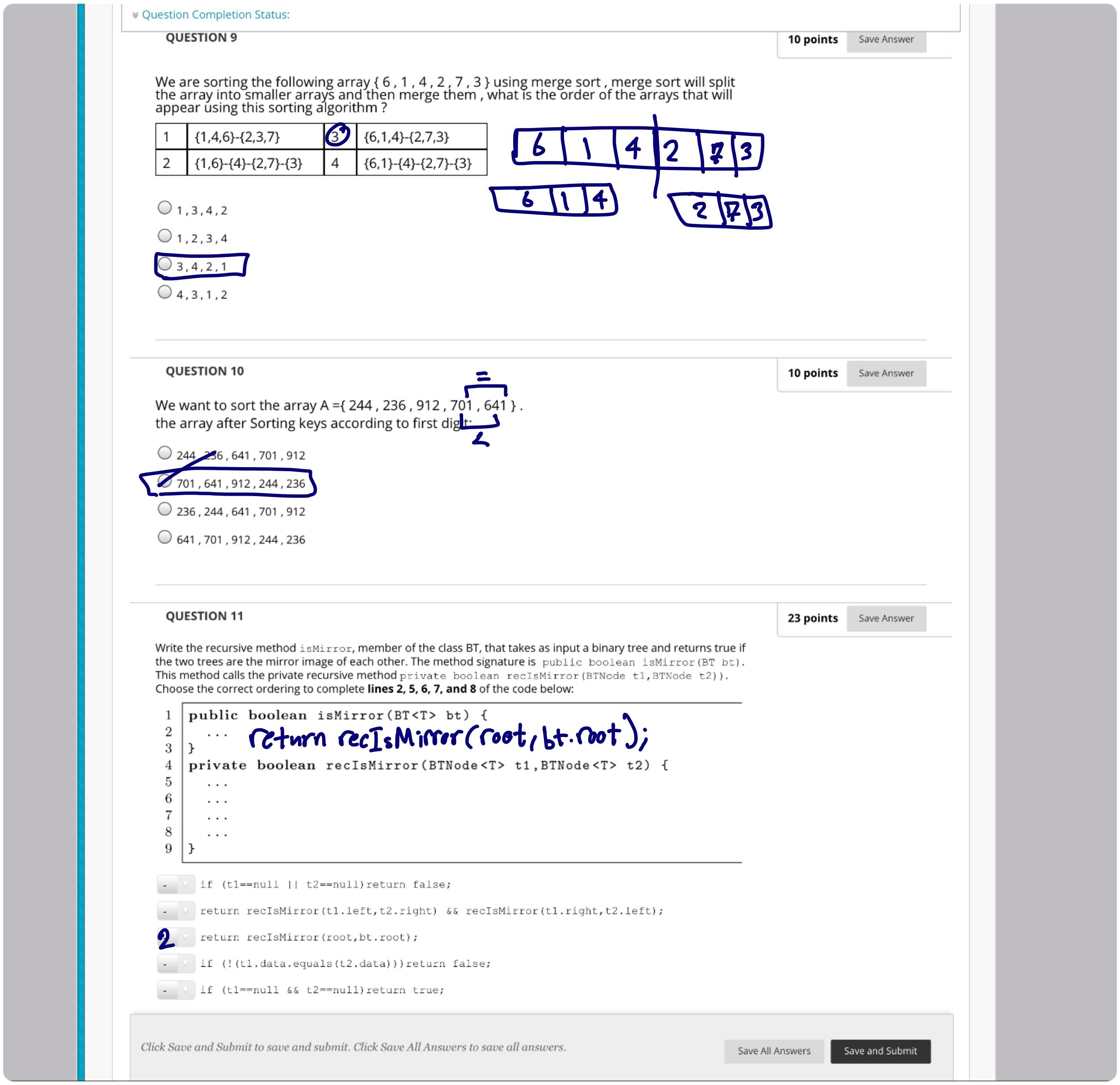
✓ 3

○ 8

○ 1

Click Save and Submit to save and submit. Click Save All Answers to save all answers.

Save All Answers Save and Submit



Question Completion Status:

QUESTION 9

10 points Save Answer

We are sorting the following array { 6 , 1 , 4 , 2 , 7 , 3 } using merge sort , merge sort will split the array into smaller arrays and then merge them , what is the order of the arrays that will appear using this sorting algorithm ?

1	{1,4,6}-{2,3,7}	[✓ 3]	{6,1,4}-{2,7,3}
2	{1,6}-{4}-{2,7}-{3}	4	{6,1}-{4}-{2,7}-{3}

6	1	4	2	7	3

6	1	4

2	7	3

○ 1 , 3 , 4 , 2

○ 1 , 2 , 3 , 4

[✓ ○ 3 , 4 , 2 , 1]

○ 4 , 3 , 1 , 2

QUESTION 10

10 points Save Answer

We want to sort the array A ={ 244 , 236 , 912 , 701 , 641 } .
the array after Sorting keys according to first digit:

=

2

○ ~~244 , 236~~ , 641 , 701 , 912

[✓ ○ 701 , 641 , 912 , 244 , 236]

○ 236 , 244 , 641 , 701 , 912

○ 641 , 701 , 912 , 244 , 236

QUESTION 11

23 points Save Answer

Write the recursive method `isMirror`, member of the class BT, that takes as input a binary tree and returns true if the two trees are the mirror image of each other. The method signature is `public boolean isMirror(BT bt)`. This method calls the private recursive method `private boolean recIsMirror(BTNode t1,BTNode t2))`. Choose the correct ordering to complete **lines 2, 5, 6, 7, and 8** of the code below:

```
1 public boolean isMirror(BT<T> bt) {
2   ...   return recIsMirror(root,bt.root);
3 }
4 private boolean recIsMirror(BTNode<T> t1,BTNode<T> t2) {
5   ...
6   ...
7   ...
8   ...
9 }
```

- ⌄ `if (t1==null || t2==null)return false;`

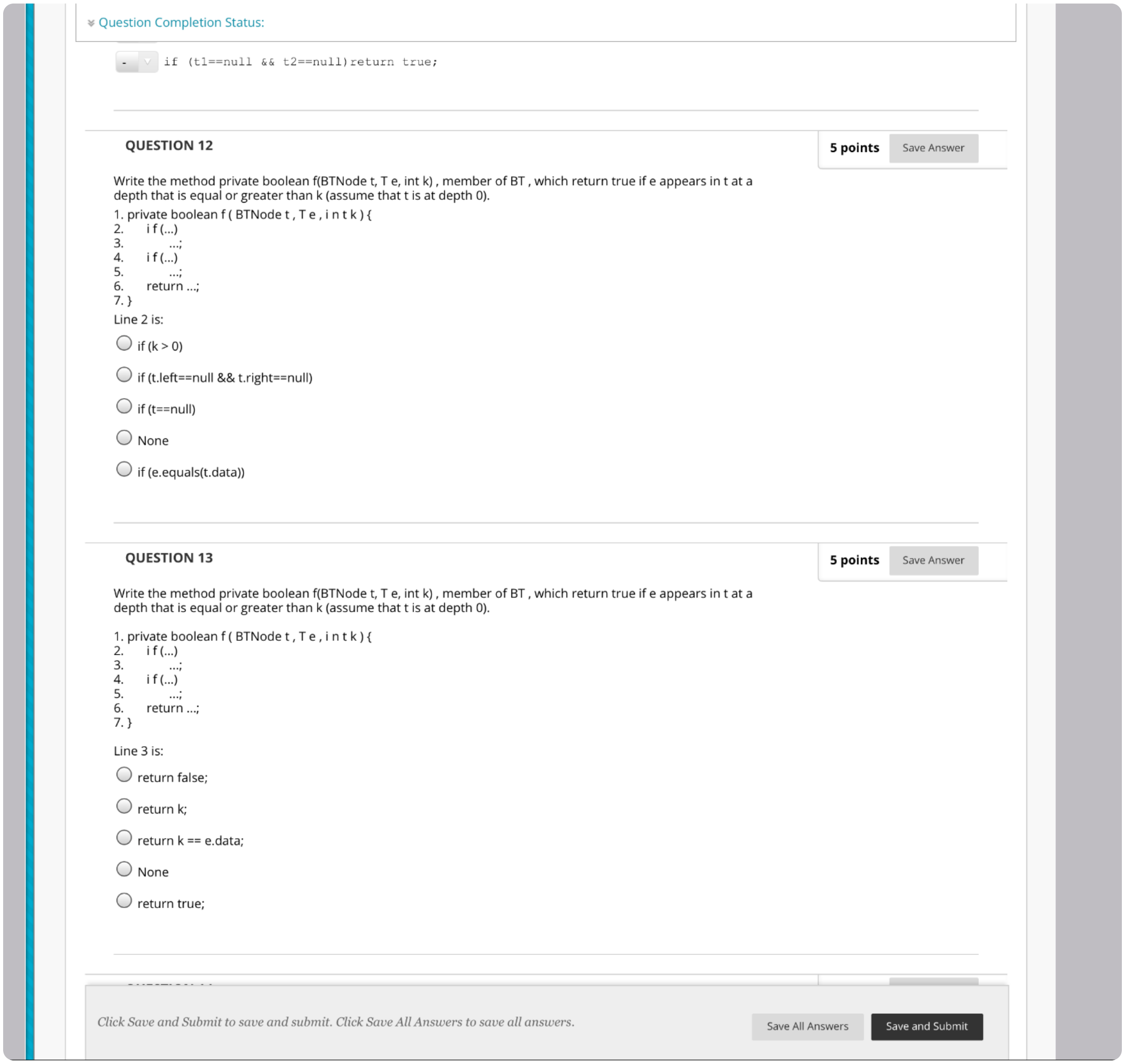
- ⌄ `return recIsMirror(t1.left,t2.right) && recIsMirror(t1.right,t2.left);`

2 ⌄ `return recIsMirror(root,bt.root);`

- ⌄ `if (!(t1.data.equals(t2.data)))return false;`

- ⌄ `if (t1==null && t2==null)return true;`

Click Save and Submit to save and submit. Click Save All Answers to save all answers.



```
-   if (t1==null && t2==null)return true;
```

QUESTION 12

Write the method private boolean f(BTNode t, T e, int k) , member of BT , which return true if e appears in t at a depth that is equal or greater than k (assume that t is at depth 0).

```
1. private boolean f ( BTNode t , T e , int k ) {
2.      if (...)
3.          ...;
4.      if (...)
5.          ...;
6.      return ...;
7. }
```

Line 2 is:

○ if (k > 0)

○ if (t.left==null && t.right==null)

○ if (t==null)

○ None

○ if (e.equals(t.data))

QUESTION 13

Write the method private boolean f(BTNode t, T e, int k) , member of BT , which return true if e appears in t at a depth that is equal or greater than k (assume that t is at depth 0).

```
1. private boolean f ( BTNode t , T e , int k ) {
2.      if (...)
3.          ...;
4.      if (...)
5.          ...;
6.      return ...;
7. }
```

Line 3 is:

○ return false;

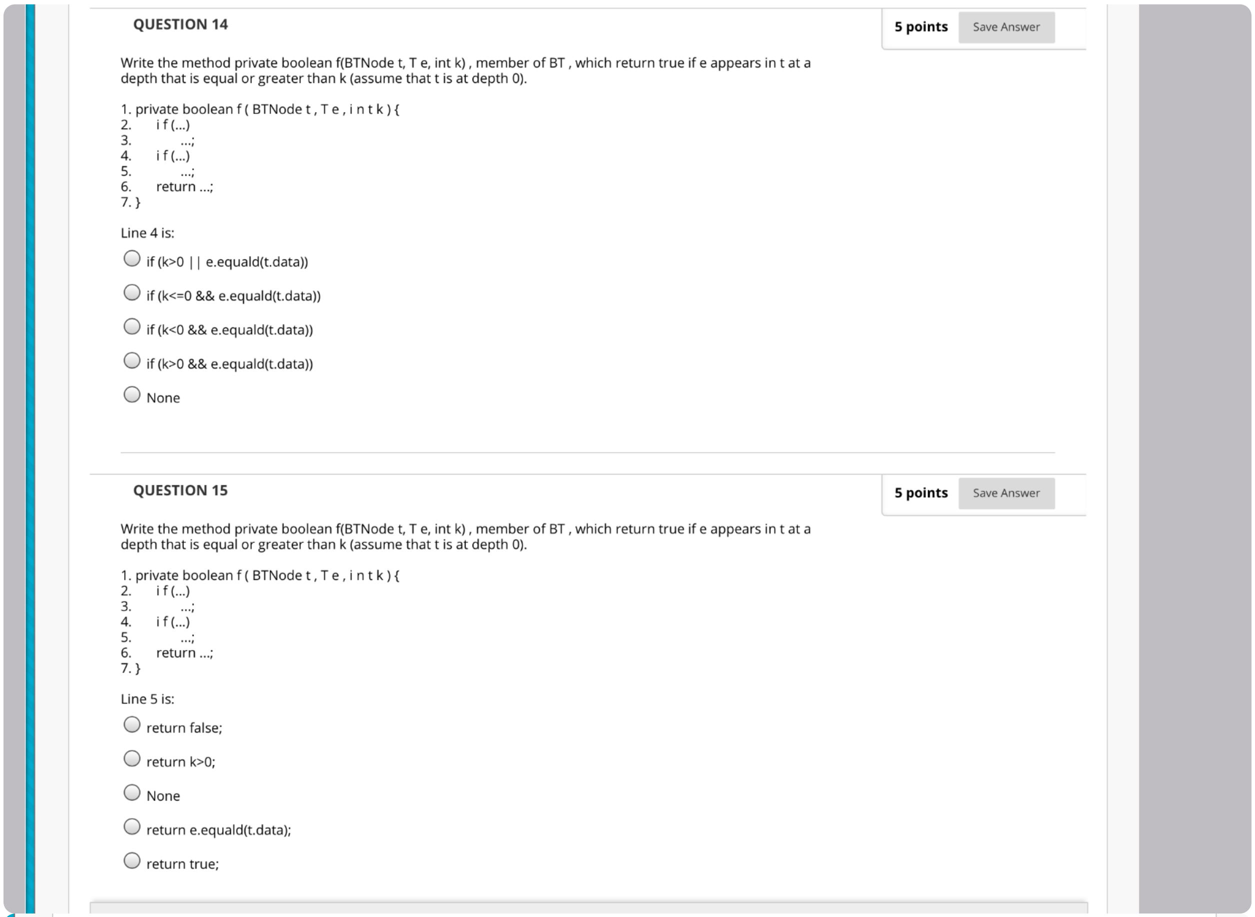
○ return k;

○ return k == e.data;

○ None

○ return true;

Click Save and Submit to save and submit. Click Save All Answers to save all answers.



QUESTION 14

Write the method private boolean f(BTNode t, T e, int k) , member of BT , which return true if e appears in t at a depth that is equal or greater than k (assume that t is at depth 0).

```
1. private boolean f ( BTNode t , T e , i n t k ) {
2.      i f (...)
3.           ...;
4.      i f (...)
5.           ...;
6.      return ...;
7. }
```

Line 4 is:

○ if (k>0 || e.equald(t.data))

○ if (k<=0 && e.equald(t.data))

○ if (k<0 && e.equald(t.data))

○ if (k>0 && e.equald(t.data))

○ None

QUESTION 15

Write the method private boolean f(BTNode t, T e, int k) , member of BT , which return true if e appears in t at a depth that is equal or greater than k (assume that t is at depth 0).

```
1. private boolean f ( BTNode t , T e , i n t k ) {
2.      i f (...)
3.           ...;
4.      i f (...)
5.           ...;
6.      return ...;
7. }
```

Line 5 is:

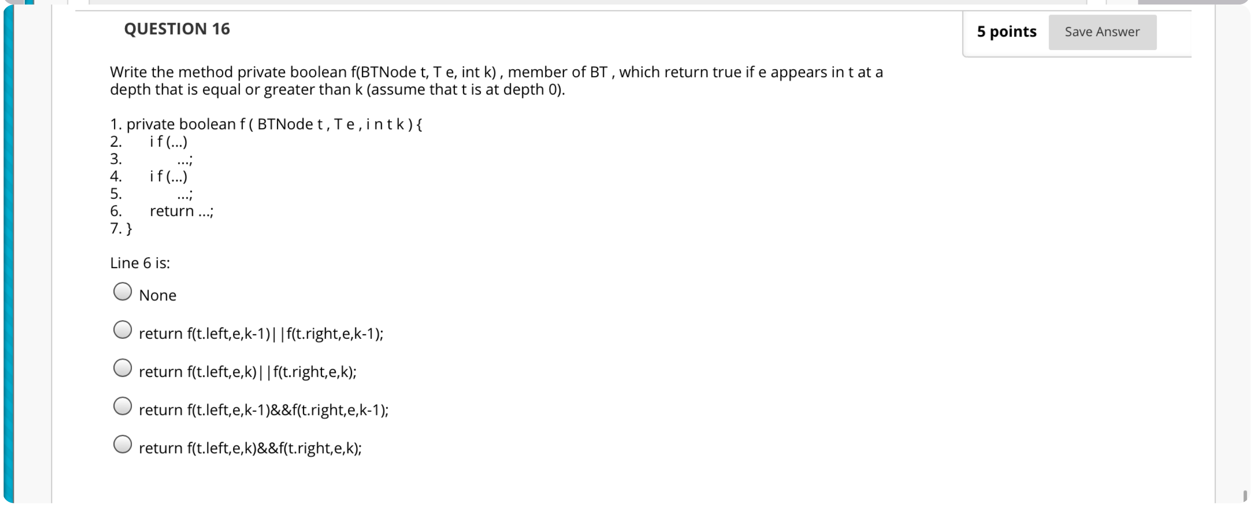
○ return false;

○ return k>0;

○ None

○ return e.equald(t.data);

○ return true;



QUESTION 16

Write the method private boolean f(BTNode t, T e, int k) , member of BT , which return true if e appears in t at a depth that is equal or greater than k (assume that t is at depth 0).

```
1. private boolean f ( BTNode t , T e , i n t k ) {
2.      i f (...)
3.           ...;
4.      i f (...)
5.           ...;
6.      return ...;
7. }
```

Line 6 is:

○ None

○ return f(t.left,e,k-1)||f(t.right,e,k-1);

○ return f(t.left,e,k)||f(t.right,e,k);

○ return f(t.left,e,k-1)&&f(t.right,e,k-1);

○ return f(t.left,e,k)&&f(t.right,e,k);