Exam 3

Due Apr 13, 2017 at 9:15pm **Points** 22 **Questions** 22
Available until Apr 13, 2017 at 9:16pm **Time Limit** 75 Minutes

Instructions

Choose the best answer from those provided.

This quiz is no longer available as the course has been concluded.

Attempt History

	Attempt	Time	Score
LATEST	Attempt 1	53 minutes	21 out of 22

Score for this quiz: **21** out of 22
Submitted Apr 13, 2017 at 8:53pm
This attempt took 53 minutes.

Question 1 — 1 / 1 pts

If the array a = [0,1,-2,3,4,-5], what is the result of the method call `foo(a, 0, 5)`?

```
public int foo(int[] a, int left, int right) {
   if (left > right) {
      return 0;
   } else if (a[left] < 0) {
      return foo(a, left + 1, right) + 1;
   } else {
      return foo(a, left + 1, right);
   }
}
```

A. 6

B. 3

C. 2

D. 0

- A
- B
- C

Correct!

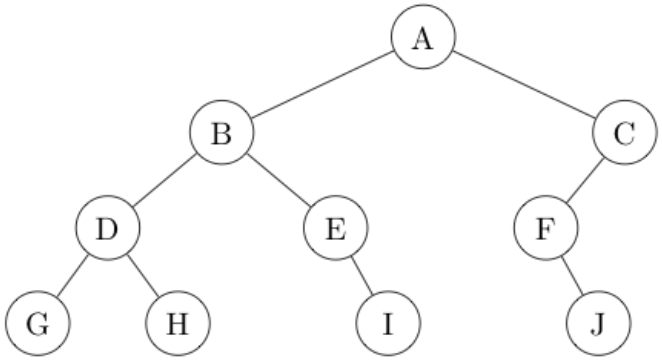
- D

Question 2

1 / 1 pts

Assuming `list` is initialized as an empty ArrayList, what does `list` contain after the method call `foo(n, list)`? Assume that `n` is a reference to the root of the binary tree below.

```
private void foo(Node n, List<Object> list) {
   if (n != null) {
      foo(n.left, list);
      list.add(n.element);
      foo(n.right, list);
   }
}
```



A. G, D, H, B, E, I, A, F, J, C

B. A, B, D, G, H, E, I, C, F, J

C. G, H, D, I, E, B, J, F, C, A

D. A, B, C, D, E, F, G, H, I, J

Correct!

- (•) A
- ( ) B
- ( ) C
- ( ) D

Question 3

1 / 1 pts

What is the return value of the method call `foo(5)`?

```
public int foo(int k) {
   if (k == 1) {
      return 1;
   }
   return foo(k - 1) + 2;
}
```

A. 1

B. 6

C. 7

D. 9

- A
- B
- C
- D

Correct!

Question 4

1 / 1 pts

What is the return value of the method call `foo(5, 1)`?

```
public int foo(int n, int f) {
   if (n == 1) {
      return f;
   }
   return foo(n - 1, n + f);
}
```

A. 1

B. 6

C. 15

D. 51

A

B

Correct! C

D

Question 5

1 / 1 pts

What is the height of a complete binary tree that contains 32 nodes?

A. 5

B. 6

C. 8

D. 16

A

Correct! B

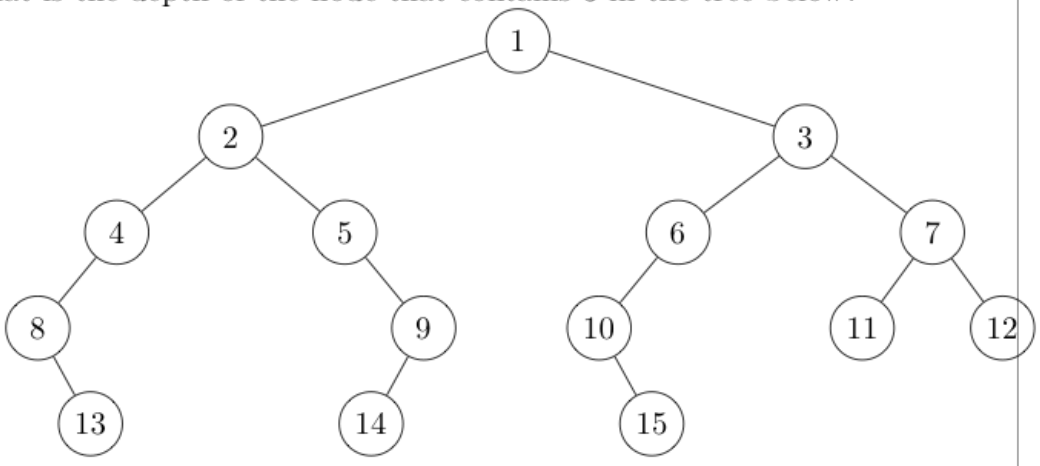
C

D

Question 6

1 / 1 pts

What is the depth of the node that contains 3 in the tree below?



A. 2

B. 3

C. 4

D. 5

Correct!

- (•) A
- ( ) B
- ( ) C
- ( ) D

Question 7

0 / 1 pts

How many leaves are in a full binary tree of height 6?

A. 31

B. 32

C. 63

D. 64

A

orrect Answer

B

'ou Answered

C

D

Question 8

1 / 1 pts

For which type binary tree are we guaranteed that all leaves are at the same level (depth)?

A. complete

B. full

C. AVL

D. red-black

A

Correct!

B

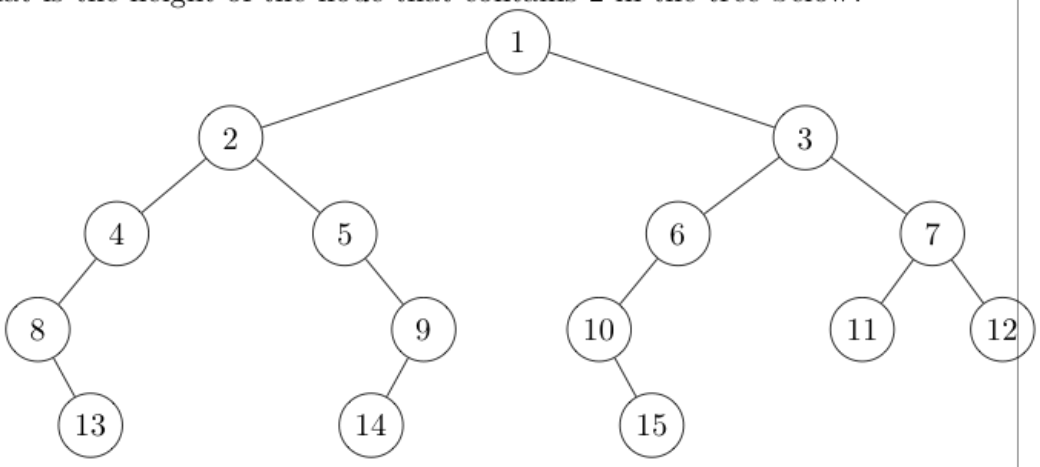
C

D

Question 9

1 / 1 pts

What is the height of the node that contains 2 in the tree below?



A. 2

B. 3

C. 4

D. 5

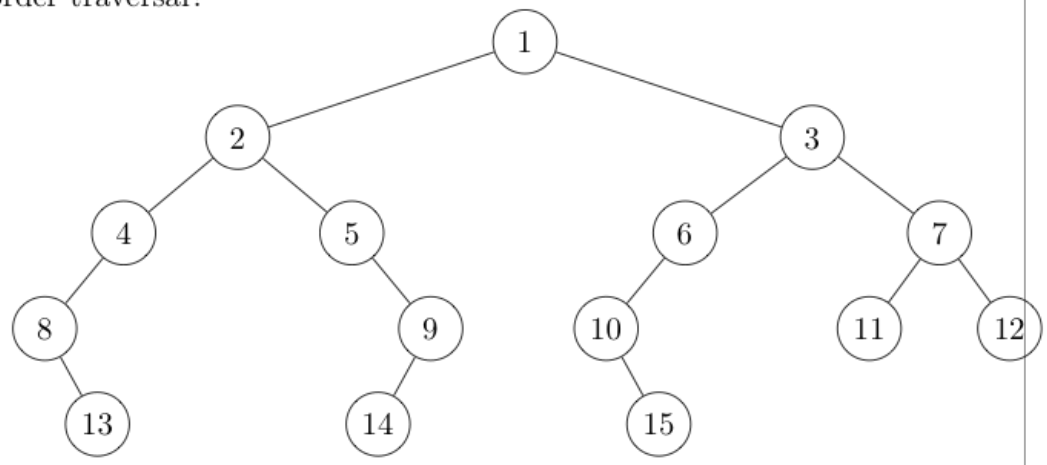
- A
- B
- C
- D

Correct!

Question 10

1 / 1 pts

In what order would be nodes of the binary tree below be visited during an inorder traversal?



A. 8, 13, 4, 2, 5, 14, 9, 1, 10, 15, 6, 3, 11, 7, 12

B. 1, 2, 4, 8, 13, 5, 9, 14, 3, 6, 10, 15, 7, 11, 12

C. 13, 8, 4, 14, 9, 5, 2, 15, 10, 6, 11, 12, 7, 3, 1

D. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15

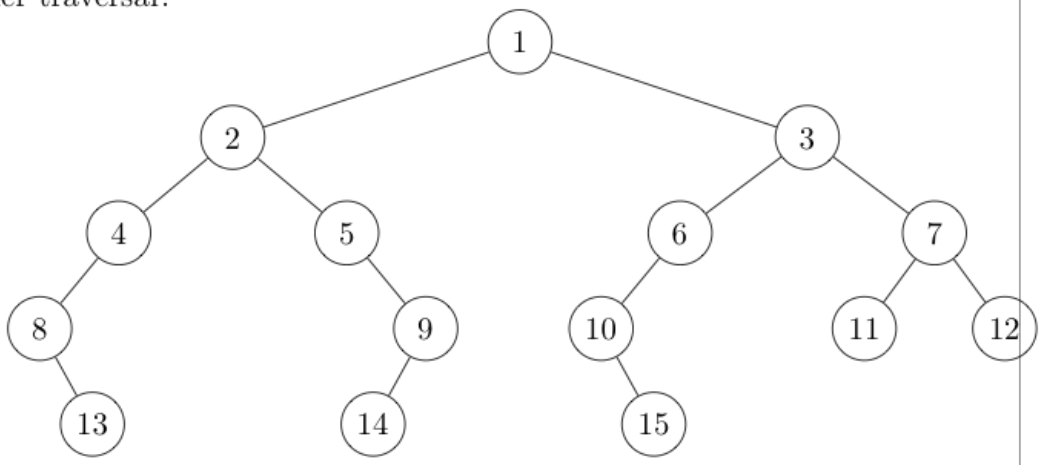
Correct!

- (•) A
- ( ) B
- ( ) C
- ( ) D

Question 11

1 / 1 pts

In what order would be nodes of the binary tree below be visited during a level order traversal?



A. 8, 13, 4, 2, 5, 14, 9, 1, 10, 15, 6, 3, 11, 7, 12

B. 1, 2, 4, 8, 13, 5, 9, 14, 3, 6, 10, 15, 7, 11, 12

C. 13, 8, 4, 14, 9, 5, 2, 15, 10, 6, 11, 12, 7, 3, 1

D. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15

- ○ A
- ○ B
- ○ C
- ◉ D

Correct!

Question 12

1 / 1 pts

What is the maximum number of nodes in a binary tree of height seven?

A. 63

B. 64

C. 127

D. 128

- A
- B

Correct!

- C
- D

Question 13

1 / 1 pts

If the order of a tree is m, which of the following statements is true?

A. Each node has at least m children.

B. Each node has at most m children.

C. Each node has exactly m children.

D. The height of the tree is $O(\log_m N)$.

- A

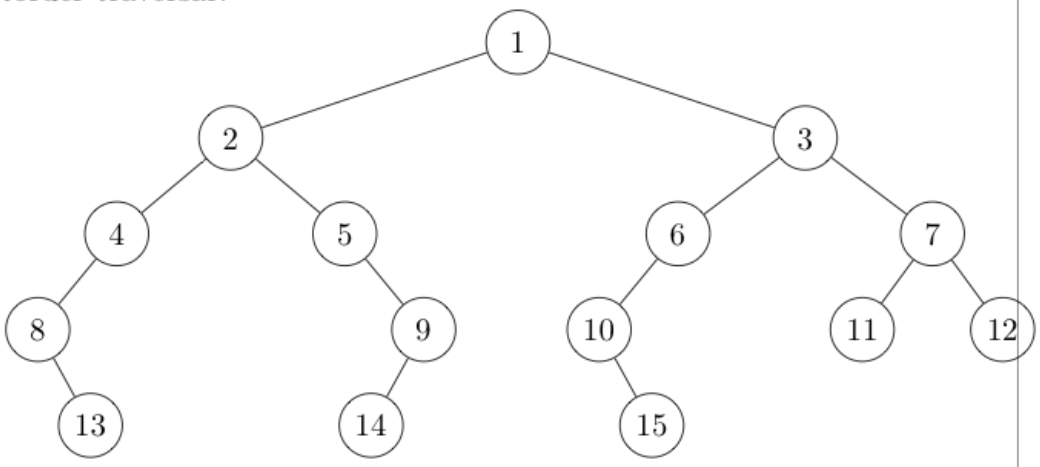
Correct!

- B
- C
- D

Question 14

1 / 1 pts

In what order would be nodes of the binary tree below be visited during a postorder traversal?



A. 8, 13, 4, 2, 5, 14, 9, 1, 10, 15, 6, 3, 11, 7, 12

B. 1, 2, 4, 8, 13, 5, 9, 14, 3, 6, 10, 15, 7, 11, 12

C. 13, 8, 4, 14, 9, 5, 2, 15, 10, 6, 11, 12, 7, 3, 1

D. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15

- A
- B
- C

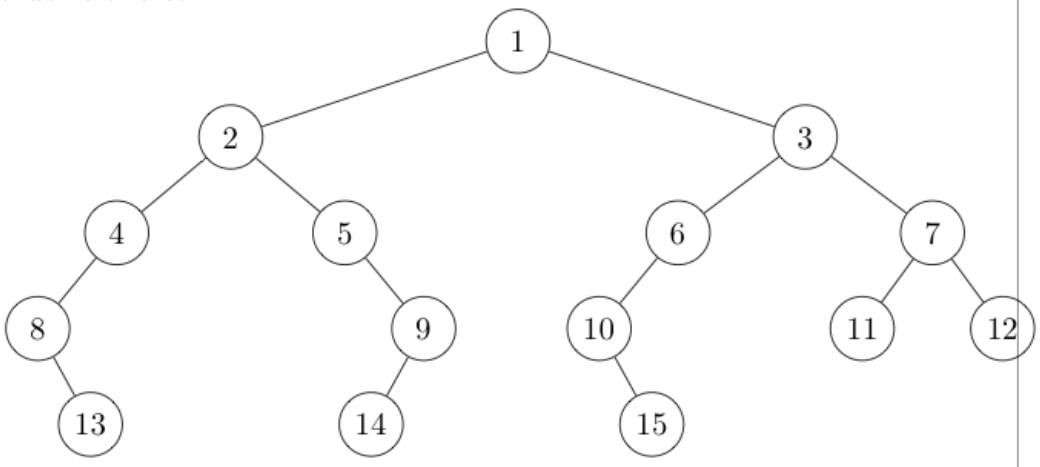
Correct!

- D

Question 15

1 / 1 pts

In what order would be nodes of the binary tree below be visited during a preorder traversal?



A. 8, 13, 4, 2, 5, 14, 9, 1, 10, 15, 6, 3, 11, 7, 12

B. 1, 2, 4, 8, 13, 5, 9, 14, 3, 6, 10, 15, 7, 11, 12

C. 13, 8, 4, 14, 9, 5, 2, 15, 10, 6, 11, 12, 7, 3, 1

D. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15

- A
- B

Correct!

- C
- D

Question 16

1 / 1 pts

What is the height of the binary search tree (with no balance constraints) that results from adding the following values in the order in which they are written?
2, 4, 6, 10, 8

A. 2

B. 3

C. 4

D. 5

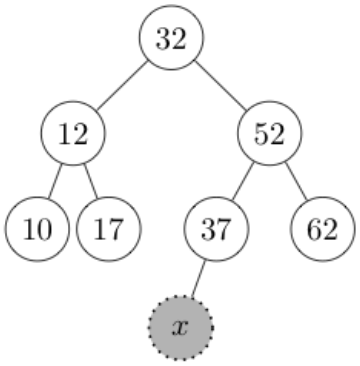
- A
- B
- C
- D

Correct!

Question 17

1 / 1 pts

Which constraint best describes the range of possible values for x in the shaded node of the binary search tree below?



A. $10 < x < 62$

B. $32 < x < 62$

C. $32 < x < 52$

D. $32 < x < 37$

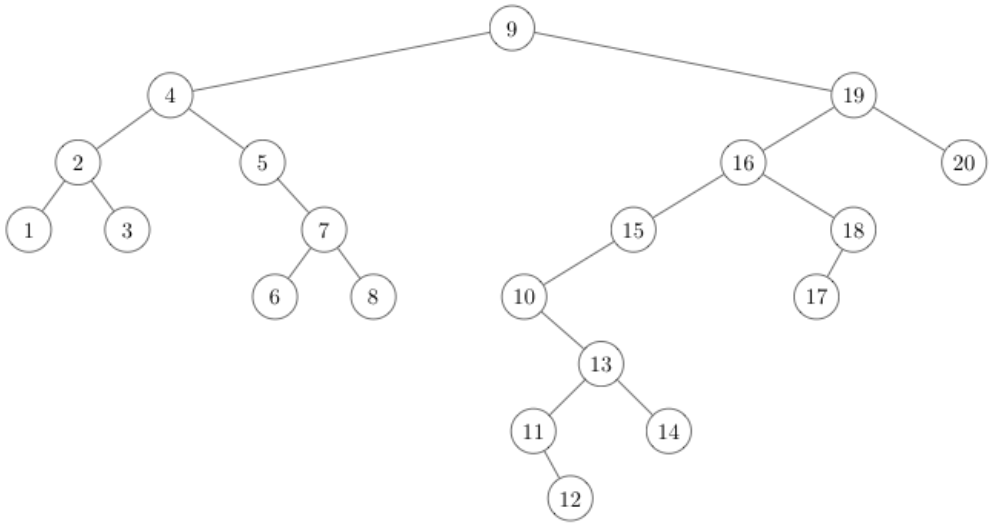
- A
- B
- C
- D

Correct!

Question 18

1 / 1 pts

Using the deletion strategy discussed in class, what are the two replacement values that could be used in removing 9 from the following binary search tree?



A. 8, 10

B. 4, 19

C. 1, 20

D. 8, 12

Correct!

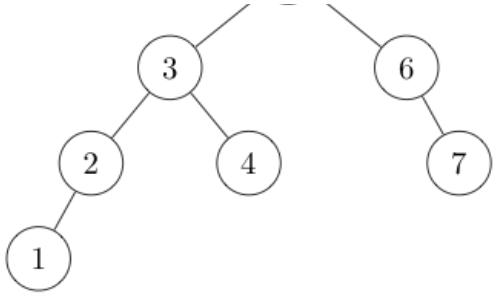
- (•) A
- ( ) B
- ( ) C
- ( ) D

Question 19

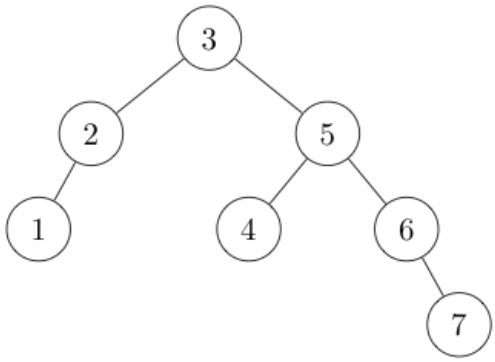
1 / 1 pts

Which tree would result from inserting the following values in the order in which they are written into an initially empty AVL tree? 2, 6, 3, 7, 5, 4, 1

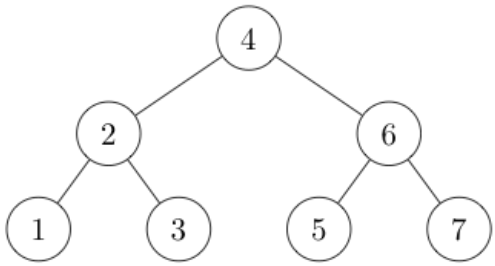
A.



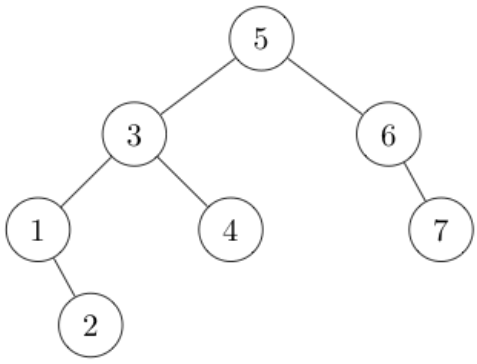
B.



C.



D.



Correct!

- A

B

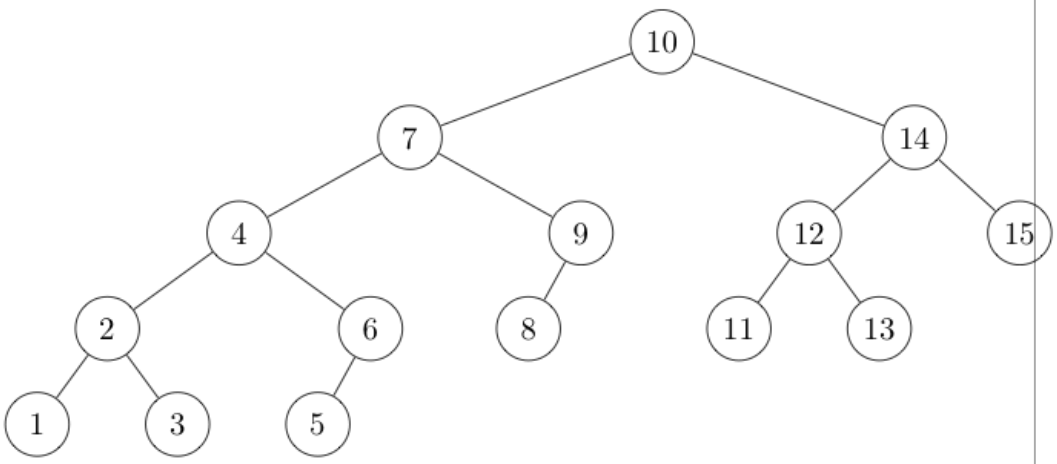
C

D

Question 20

1 / 1 pts

What is the balance factor of the root of the AVL tree below?



A. -1

B. 0

C. 1

D. -2

Correct!

A

B

C

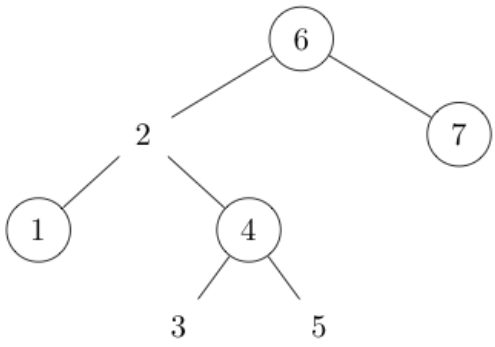
D

Question 21

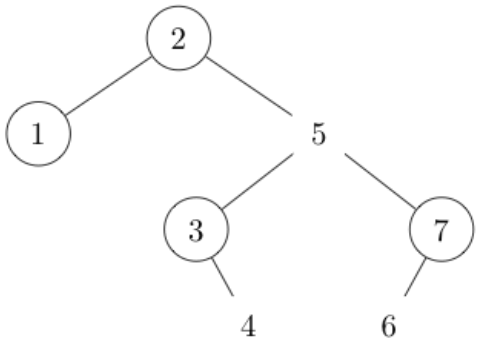
1 / 1 pts

Which tree would result from inserting the following values in the order in which they are written into an initially empty red-black tree? (Black nodes are circled, red nodes are not.) 2, 7, 1, 5, 3, 4, 6

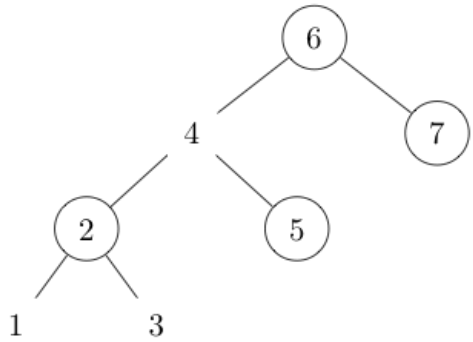
A.



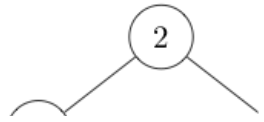
B.

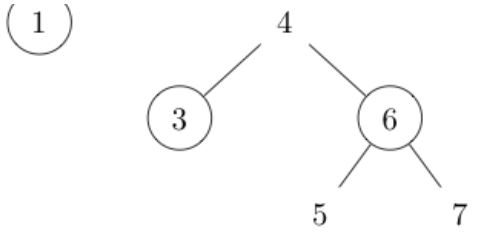


C.



D.





- A
- B

Correct!

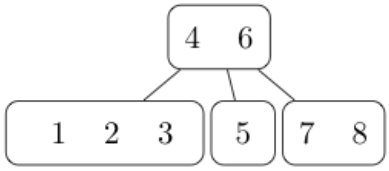
- C
- D

Question 22

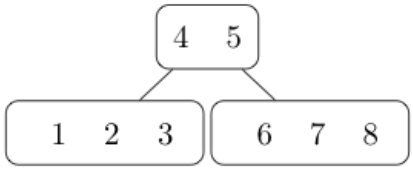
1 / 1 pts

Which tree would result from inserting the following values in the order in which they are written into an initially empty 2-4 tree? 1, 2, 3, 4, 5, 6, 7, 8

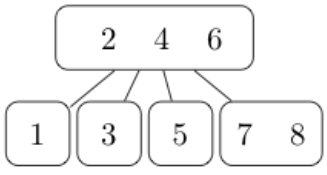
A.



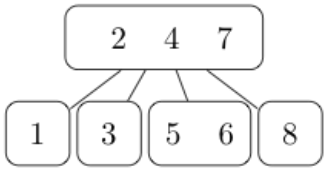
B.



C.



D.



- A
- B

Correct!

- C
- D

Quiz Score: **21** out of 22