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Data Structures

This is a preview of the draft version of the quiz

Questions to test your knowledge and understanding of basic data structures. For each question only the best solution will be graded as correct, and as usual grading is case sensitive. Note that you should be able to show your work to solve all of these problems, you should not just ask the internet for the answer. If you need to refresh your memory on any topics, see the following for links to resources: **Data Structures and Algorithms (https://cs.indstate.edu/wiki/index.php/Algorithms_and_Data_Structures_-_Getting_Started)** .

Quiz Type	Practice Quiz
Points	18
Shuffle Answers	Yes
Time Limit	No Time Limit
Multiple Attempts	No
View Responses	Always
Show Correct Answers	Immediately
One Question at a Time	No
Require Respondus LockDown Browser	No
Required to View Quiz Results	No
Webcam Required	No

Due	For	Available from	Until
-	Everyone	-	-

Preview

Submitted Feb 22 at 12:30pm

Unanswered

Question 1

0 / 1 pts

Given the following sequence of operations to a stack, what are the final contents of the stack?
[('push', 31), ('push', 50), ('push', 48), ('pop',), ('push', 19), ('push', 10), ('pop',), ('pop',), ('push', 29), ('push', 1)]
Specify your answer by separating the values by commas and with the left being the "bottom", so that ('push', 3), ('push', 1), ('push', 10) would have correct answer: 3, 1, 10.

ou Answered

orrect Answers

31, 50, 29, 1

Unanswered

Question 2

0 / 1 pts

Given the following sequence of operations to a stack, what are the final contents of the stack?
[('push', 12), ('push', 11), ('push', 48), ('push', 46), ('push', 30), ('push', 24), ('push', 46), ('push', 41), ('pop',), ('push', 35)]
Specify your answer by separating the values by commas and with the left being the "bottom", so that ('push', 3), ('push', 1), ('push', 10) would have correct answer: 3, 1, 10.

ou Answered

orrect Answers

12, 11, 48, 46, 30, 24, 46, 35

Unanswered

Question 3

0 / 1 pts

Given the following sequence of operations to a stack, what are the final contents of the stack?
[('push', 19), ('push', 29), ('push', 18), ('push', 42), ('pop',), ('push', 50), ('push', 21), ('pop',), ('push', 42), ('push', 28)]
Specify your answer by separating the values by commas and with the left being the "bottom", so that ('push', 3), ('push', 1), ('push', 10) would have correct answer: 3, 1, 10.

ou Answered

orrect Answers

19, 29, 18, 50, 42, 28

Unanswered

Question 4

0 / 1 pts

Given the following sequence of operations to a queue, what are the final contents of the queue?
[('enqueue', 9), ('enqueue', 13), ('enqueue', 29), ('dequeue',), ('enqueue', 11), ('enqueue', 4), ('enqueue', 36), ('enqueue', 49), ('enqueue', 37), ('dequeue',)]
Specify your answer by separating the values by commas and with the left being the "front", so that ('enqueue', 3), ('enqueue', 1), ('enqueue', 10), ('dequeuq') would have correct answer: 1, 10.

ou Answered

orrect Answers

29, 11, 4, 36, 49, 37

Unanswered

Question 5

0 / 1 pts

Given the following sequence of operations to a queue, what are the final contents of the queue?
[('enqueue', 27), ('enqueue', 10), ('enqueue', 48), ('enqueue', 41), ('dequeue',), ('dequeue',), ('enqueue', 1), ('dequeue',), ('enqueue', 27), ('dequeue',)]
Specify your answer by separating the values by commas and with the left being the "front", so that ('enqueue', 3), ('enqueue', 1), ('enqueue', 10), ('dequeuq') would have correct answer: 1, 10.

ou Answered

orrect Answers 1, 27

Unanswered

Question 6

0 / 1 pts

Given the following sequence of operations to a queue, what are the final contents of the queue?
[('enqueue', 33), ('enqueue', 24), ('enqueue', 28), ('enqueue', 37), ('dequeue',), ('enqueue', 34), ('dequeue',), ('dequeue',), ('enqueue', 33), ('enqueue', 41)]
Specify your answer by separating the values by commas and with the left being the "front", so that ('enqueue', 3), ('enqueue', 1), ('enqueue', 10), ('dequeuq') would have correct answer: 1, 10.

ou Answered

orrect Answers 37, 34, 33, 41

Unanswered

Question 7

0 / 1 pts

Given the following sequence of operations to a list, what are the final contents of the list?
[('insert', 0, 50), ('insert', 1, 36), ('insert', 0, 36), ('insert', 3, 32), ('insert', 1, 19), ('insert', 4, 8), ('insert', 6, 24), ('delete', 5), ('delete', 2), ('delete', 0)]
Specify your answer by separating the values by commas and with the left being the index 0 (and the "head"), so that ('insert', 5, 0), ('insert', 10, 1), ('insert', 20, 0) would have correct answer: 20, 5, 10.

ou Answered

orrect Answers 19, 36, 8, 24

Unanswered

Question 8

0 / 1 pts

Given the following sequence of operations to a list, what are the final contents of the list?
[('insert', 0, 33), ('insert', 1, 50), ('insert', 2, 25), ('delete', 0), ('insert', 1, 32), ('delete', 0), ('insert', 1, 31), ('delete', 1), ('insert', 2, 43), ('insert', 0, 44)]
Specify your answer by separating the values by commas and with the left being the index 0 (and the "head"), so that ('insert', 5, 0), ('insert', 10, 1), ('insert', 20, 0) would have correct answer: 20, 5, 10.

ou Answered

orrect Answers 44, 32, 25, 43

Unanswered

Question 9

0 / 1 pts

Given the following sequence of operations to a list, what are the final contents of the list?

[(‘insert’, 0, 16), (‘insert’, 1, 5), (‘insert’, 0, 2), (‘insert’, 2, 10), (‘delete’, 2), (‘delete’, 0), (‘insert’, 2, 48), (‘insert’, 3, 23), (‘delete’, 0), (‘delete’, 1)]
Specify your answer by separating the values by commas and with the left being the index 0 (and the “head”), so that (‘insert’, 5, 0), (‘insert’, 10, 1), (‘insert’, 20, 0) would have correct answer: 20, 5, 10.

ou Answered

orrect Answers 5, 23

Unanswered

Question 10

0 / 1 pts

Given the following sequence of operations to a binary search tree, what are the final contents of the tree?
[(‘add’, 48), (‘add’, 5), (‘add’, 4), (‘add’, 22), (‘add’, 45), (‘delete’, 5), (‘add’, 11), (‘add’, 28), (‘add’, 3), (‘add’, 2)]
Specify your answer by separating the values by giving the contents of the tree by level, so that a full BST with 3 levels containing the numbers 1 to 7 would be listed like this: 4; 2, 6; 1, 3, 5, 7. For the delete operation, you should do the following: if the node is a leaf just remove it, else if the node only has one child then redirect its parent to its child, else replace the node’s value with the next larger value in the tree (its left-most descendent on its right)

ou Answered

orrect Answers 48; 22; 4, 45; 3, 11, 28; 2

Unanswered

Question 11

0 / 1 pts

Given the following sequence of operations to a binary search tree, what are the final contents of the tree?

[(‘add’, 10), (‘add’, 1), (‘add’, 18), (‘add’, 48), (‘add’, 25), (‘add’, 11), (‘add’, 5), (‘add’, 7), (‘delete’, 5), (‘add’, 50)]
Specify your answer by separating the values by giving the contents of the tree by level, so that a full BST with 3 levels containing the numbers 1 to 7 would be listed like this: 4; 2, 6; 1, 3, 5, 7. For the delete operation, you should do the following: if the node is a leaf just remove it, else if the node only has one child then redirect its parent to its child, else replace the node’s value with the next larger value in the tree (its left-most descendent on its right)

ou Answered

orrect Answers 10; 1, 18; 7, 11, 48; 25, 50

Unanswered

Question 12

0 / 1 pts

Given the following sequence of operations to a binary search tree, what are the final contents of the tree?
[(‘add’, 30), (‘add’, 1), (‘add’, 25), (‘add’, 44), (‘add’, 8), (‘add’, 16), (‘add’, 17), (‘add’, 0), (‘delete’, 30), (‘delete’, 25)]
Specify your answer by separating the values by giving the contents of the tree by level, so that a full BST with 3 levels containing the numbers 1 to 7 would be listed like this: 4; 2, 6; 1, 3, 5, 7. For the delete operation, you should do the following: if the node is a leaf just remove it, else if the node only has one child then redirect its parent to its child, else replace the node’s value with the next larger value in the tree (its left-most descendent on its right)

ou Answered

orrect Answers 44; 1; 0, 8; 16; 17

Unanswered

Question 13

0 / 1 pts

Given the following sequence of operations to a hash table with linear probing, what are the final contents of the table?
[('add', 14), ('add', 11), ('add', 16), ('add', 1), ('add', 15), ('delete', 14), ('add', 6), ('delete', 16), ('add', 16), ('add', 8)]
Give the contents of the array starting from index 0 and using "-" for empty cells. For delete, when an item is deleted put "del" in that cell (inserts/adds can put into an empty or "del" spot). So the answer might look like this: 5, 7, 3, -, 4, del
Use an initial hash table size of 10, hash function h(value, table_size) = value*3 % table_size, and only grow the table if it is completely full.

ou Answered

orrect Answers

-, -, del, 11, 1, 15, 8, -, 16, 6

Unanswered

Question 14

0 / 1 pts

Given the following sequence of operations to a hash table with linear probing, what are the final contents of the table?
[('add', 5), ('add', 15), ('add', 10), ('add', 20), ('add', 12), ('add', 7), ('delete', 7), ('add', 16), ('add', 6), ('delete', 12)]
Give the contents of the array starting from index 0 and using "-" for empty cells. For delete, when an item is deleted put "del" in that cell (inserts/adds can put into an empty or "del" spot). So the answer might look like this: 5, 7, 3, -, 4, del
Use an initial hash table size of 10, hash function h(value, table_size) = value*3 % table_size, and only grow the table if it is completely full.

ou Answered

orrect Answers

10, 20, del, -, -, 5, 15, del, 16, 6

Unanswered

Question 15

0 / 1 pts

Given the following sequence of operations to a hash table with linear probing, what are the final contents of the table?
[('add', 12), ('add', 3), ('add', 20), ('add', 4), ('delete', 12), ('add', 6), ('delete', 20), ('add', 0), ('delete', 4), ('add', 15)]
Give the contents of the array starting from index 0 and using "-" for empty cells. For delete, when an item is deleted put "del" in that cell (inserts/adds can put into an empty or "del" spot). So the answer might look like this: 5, 7, 3, -, 4, del
Use an initial hash table size of 10, hash function h(value, table_size) = value*3 % table_size, and only grow the table if it is completely full.

You Answered

Correct Answers

0, -, del, -, -, 15, del, -, 6, 3

Unanswered

Question 16

0 / 1 pts

Given the following sequence of operations to a max heap, what are the final contents of the heap?
[('insert', 1), ('insert', 49), ('insert', 38), ('insert', 47), ('insert', 48), ('remove max',), ('insert', 18), ('remove max',), ('remove max',), ('insert', 25)]
Specify your answer by giving the heap in order from top to bottom and left to right, separated by commas. A heap with 3 levels containing the numbers 1 to 7 would be listed like this: 7, 5, 6, 1, 2, 4, 3 (assuming that is what the heap ended up looking like after the operations).

You Answered

Correct Answers

38, 25, 1, 18

Unanswered

Question 17

0 / 1 pts

Given the following sequence of operations to a max heap, what are the final contents of the heap?
[('insert', 11), ('insert', 48), ('insert', 3), ('insert', 12), ('insert', 2), ('insert', 13), ('insert', 27), ('remove max',), ('insert', 50), ('insert', 13)]
Specify your answer by giving the heap in order from top to bottom and left to right, separated by commas. A heap with 3 levels containing the numbers 1 to 7 would be listed like this: 7, 5, 6, 1, 2, 4, 3 (assuming that is what the heap ended up looking like after the operations).

ou Answered

orrect Answers

50, 13, 27, 12, 2, 3, 13, 11

Unanswered

Question 18

0 / 1 pts

Given the following sequence of operations to a max heap, what are the final contents of the heap?
[('insert', 8), ('insert', 3), ('insert', 25), ('insert', 43), ('remove max',), ('insert', 18), ('insert', 26), ('insert', 38), ('remove max',), ('remove max',)]
Specify your answer by giving the heap in order from top to bottom and left to right, separated by commas. A heap with 3 levels containing the numbers 1 to 7 would be listed like this: 7, 5, 6, 1, 2, 4, 3 (assuming that is what the heap ended up looking like after the operations).

ou Answered

orrect Answers

25, 18, 8, 3