ds1pr21a3 Test 2

Due May 4, 2021 at 3:40pm **Points** 51 **Questions** 10
Available May 4, 2021 at 2pm - May 4, 2021 at 3:45pm about 2 hours
Time Limit 100 Minutes

Instructions

Many algorithms, methods, data structures and types have different versions. These exercises refer to the version you have seen in the classroom and/or you have learnt from my lecture notes (except of the structogram completing exercises).

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

Attempt History

	Attempt	Time	Score
LATEST	Attempt 1	31 minutes	50 out of 51

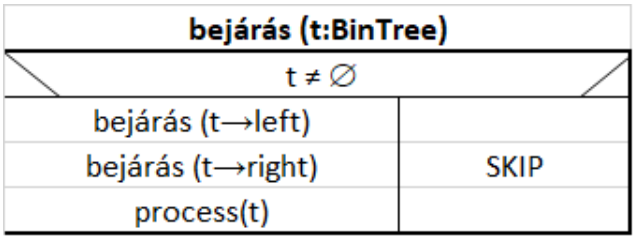
Correct answers are hidden.

Score for this quiz: **50** out of 51
Submitted May 4, 2021 at 2:31pm
This attempt took 31 minutes.

Question 1

2 / 2 pts

Which traversal is coded here? (The name of the procedure is not important.)



- preorder
- postorder
- inorder

Question 2

2 / 2 pts

Which traversal is coded here? (The name of the procedure is not important.)

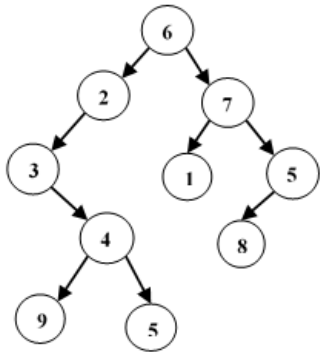
bejárás (t:BinTree)	
t ≠ ∅	
process(t)	
bejárás (t→left)	SKIP
bejárás (t→right)	

- inorder
- postorder
- preorder

Question 3

2 / 2 pts

Supply the Inorder traversal of the following tree. (Do not use blanks. Separate the numbers with commas. No punctuation mark at the end.)

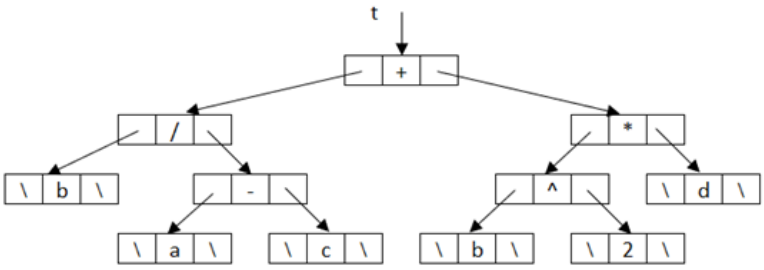


3,9,4,5,2,6,1,7,8,5

Question 4

2 / 2 pts

Supply the completely parenthesised expression corresponding to the following expression tree.
(Do not use blanks but each compound (sub)expression must be put into a pair of brackets.)
For example: (((a+2)-((b*c)-d))/e)



((b/(a-c))+((b^2)*d))

Question 5

12 / 12 pts

Complete the structogram so that it solve the following task.

Search key k in binary search tree t. Return a pointer to the node containing key k, or return pointer Ø, if there is no such node.

search(t:Node*; k:T):$

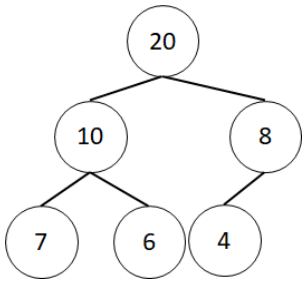
ß			
return Ø	€	@	Ð
	#	return search(t→right,k)	return search(t→left,k)

#	return t
@	k > (t->key)
Ð	k < (t->key)
$	Node*

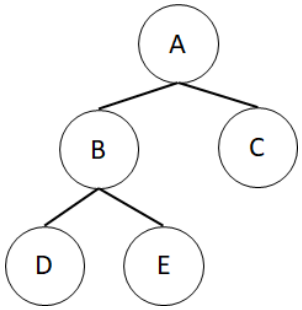
ß	t = NULL
€	k = (t->key)

Question 6

3 / 3 pts



Given the heap above. What heap is the result of removing its maximum?



A	10
B	7
C	8
D	4
E	6

Question 7

3 / 3 pts

<15,7,14,6,5,11,12>

Given the heap above. What heap is the result of removing its maximum?

Result: <A, B, C, D, E, F>

A	14
B	7
C	12
D	6
E	5
F	11

Question 8

9 / 9 pts

Sort the following array with heap sort.

1, 6, 5, 3, 7, 9, 2, 8

Supply the array after building the initial heap. (Do not use blanks. Separate the numbers with commas. No punctuation mark at the end.)

9,8,5,6,7,1,2,3

Starting from the initial heap, supply the array after the first and second sinking operation of the main loop of heap sort. (Do not use blanks. Separate the numbers with commas. No punctuation mark at the end.)

after the first sinking: 8,7,5,6,3,1,2,9

after the second sinking: 7,6,5,2,3,1,8,9

Answer 1:

9,8,5,6,7,1,2,3

Answer 2:

8,7,5,6,3,1,2,9

Answer 3:

7,6,5,2,3,1,8,9

Question 9

6 / 6 pts

We have a binary search tree. Its Preorder traversal is the following:

3,1,2,6,4,5,7

Supply its Postorder traversal: 2,1,5,4,7,6,3

Delete 3 from this binary search tree as you have seen it in the classroom.

Supply the Level order traversal of the resulting binary search tree:

4,1,6,2,5,7

(Do not use blanks. Separate the numbers with commas. No punctuation mark at the end.)

Answer 1:

2,1,5,4,7,6,3

Answer 2:

4,1,6,2,5,7

Partial

Question 10

9 / 10 pts

Given the following **list** (d = 3, r = 4): ⟨210, 331, 213, 010, 112, 123, 132, 222, 001, 300⟩

Run the first two passes of radix sort (using distributing sort) and supply the list after the second pass:

⟨ 300 , 001 , 210 ,
010 , 112 , 213 ,
222 , 123 , 313 ,
132 ⟩

Answer 1:

300

Answer 2:

001

Answer 3:

210

Answer 4:

010

Answer 5:

112

Answer 6:

213

Answer 7:

222

Answer 8:

123

Answer 9:

313

Answer 10:

132

Quiz Score: **50** out of 51