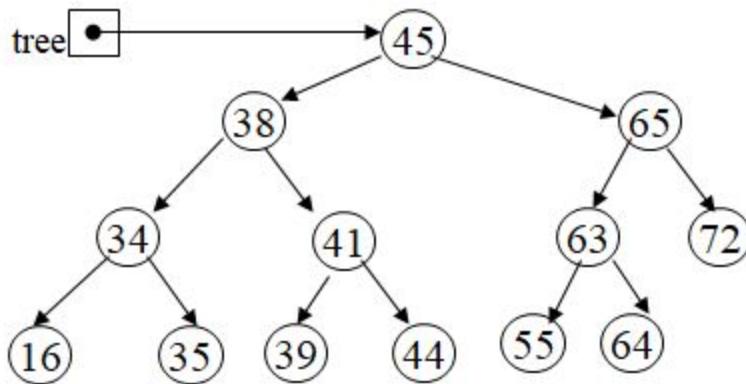


CMSC 204 - Trees Lab
Module 14 - “Trees, Binary Search Tree, & Balanced Search Trees”

Problem 1:

Given the following binary tree:



A. Inorder traversal:

{16, 34, 35, 38, 39, 41, 44, 45, 55, 63, 64, 65, 72}

B. Preorder traversal:

{45, 38, 34, 16, 35, 41, 39, 44, 65, 63, 55, 64, 72}

C. Postorder traversal:

{16, 35, 34, 39, 44, 41, 38, 55, 64, 63, 72, 65, 45}

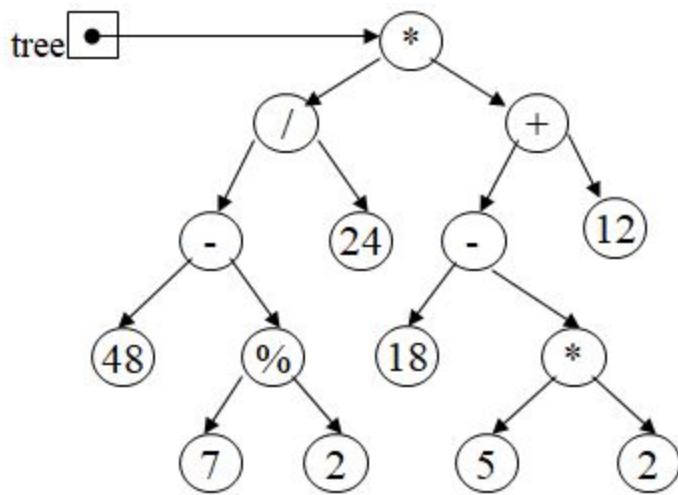
D.

i. Height: 4

ii. Nodes on Level 2: {38, 65}

Problem 2:

Given the following binary expression tree:



A. Inorder traversal:

$$((48 - (7 \% 2)) / 24) * ((18 - (5 * 2)) + 12)$$

B. Postorder traversal:

{48, 7, 2, %, -, 24, /, 18, 5, 2, *, -, 12, +, *}

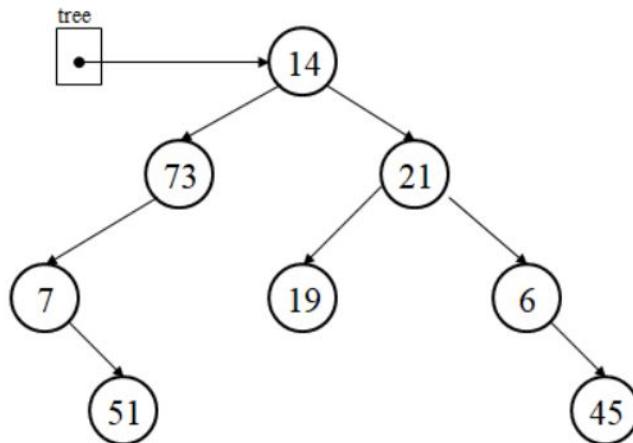
C. Evaluate using integer division: 20

D. Evaluate using float division: 39.1667

Problem 3:

The elements in a binary tree area to be stored in an array.
Each element is a nonnegative int value.

- A. What value can you use as a dummy value, if the binary tree is not complete?
`null`
- B. Show the contents of the array, given the tree illustrated below.



[0]	14
[1]	73
[2]	21
[3]	7
[4]	null
[5]	19
[6]	6
[7]	null
[8]	51
[9]	null
[10]	null
[11]	null
[12]	null
[13]	null
[14]	45

Problem 4:

Given the array pictured below, draw the binary tree that can be created from its elements.

[0]	35
[1]	20
[2]	71
[3]	40
[4]	52
[5]	63
[6]	null
[7]	17
[8]	25
[9]	null
[10]	7
[11]	null
[12]	45

