**CMSC204 : Tree Lab**

Class : CMSC204 CRN 33244

Program: Series of exercises on Trees

Instructor: Huseyin Aygun

Summary of Description: Tree Lab

Due Date: 03/09/2024

Integrity Pledge: I pledge that I have completed the programming assignment independently.

I have not copied the code from a student or any source: **Fatima Mbodji**

Exercise 1: Given the following binary tree:

tree

(a) What is the inorder traversal of the tree?

**16 – 34 – 35 – 38 – 39 – 41 – 44 – 45 – 55 – 63 – 64 – 65 – 72**

(b) What is the preorder traversal of the tree?

**45 – 38 – 34 – 16 – 35 – 41 – 39 – 44 – 65 – 63 – 55 – 64 - 72**

(c) What is the postorder traversal of the tree?

**16 – 35 – 34 – 39 – 44 – 41 – 38 – 55 – 64 – 63 – 72 – 65 - 45**

(d) What is the height of the tree? What nodes are on level 2?

Height: **4**

Nodes on level 2:  **34, 41, 63, 72**

Exercise 2: Given the following binary expression tree:

tree

1. What is the inorder traversal of the tree?

**48 - 7%2 / 24 \* 18 – 5\*2 + 12**

(b) What is the postorder traversal of the tree?

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

1. What does it evaluate to if using integer division?

**20**

1. What does it evaluate to if using float division?

**39.17**

Exercise 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** |

Exercise 4: Given the array pictured below, draw the binary tree that can be

created from its elements.

A drawing of a diagram

Description automatically generated