COSC2430 Homework 5: Tree

1. Introduction

You will create a C++ program to implement the B-Tree. The purpose of this homework is to let students be familiar with the B-Tree.

2. Input and Output

a. Input file

All values that will be added to the tree separated by a space, tab, or new line. Values will be positive.

b. Command file

Degree of the tree: Degree=*value*
Level to print: Level *value*

c. Output file

The output is a single text file.
Height of the tree and list of the numbers on the specified levels.
If the level is empty, print *Empty.*

d. Examples

i. Example 1

input1.txt

55 60 72

command1.txt

Degree=3
Level 2

output1.txt

Height=2
55 72

ii. Example 2

input2.txt

13	28	1	32	81
17	72	70	77	58
51	24	25	5	55
68	24	28	8	19
15	40	91	17	37
10	20	4	33	21

command2.txt

Degree=4
Level 10
Level 9
Level 2
Level 2
Level 1
Level 3

output2.txt

Height=3
Empty
Empty
5 19 21 33 70 77
5 19 21 33 70 77
13 28 51
1 4 8 10 15 17 20 24 25 32 37 40 55 58 68 72 81 91

iii. Example 3

input3.txt

228 72 177 9 284 1 169 263 237 63
22 148 114 183 98 149 232 100 54 236

command3.txt

Degree=4
Level 3

output3.txt

Height=3
1 22 54 63 98 100 148 149 169 183 232 236 263 284

3. Requirements

Please create the BTree manually.
The main C++ problem will become the executable to be tested by the TAs. The result file should be written to another text file (output file), provided with the command line.

Homework is individual. Your homework will be automatically screened for code plagiarism against code from the other students and code from external sources. Code that is copied from another student (for instance, renaming variables, changing for and while loops, changing indentation, etc, will be treated as copy) will be detected and result in ”0” in this homework. The limit is 50% similarity. Here are some previous homework which have been found to copy each other (the main function has been deleted).

4. **Turn in your homework**

   Homework 5 needs to be turned in to our Linux server, follow the link here https://rizk.netlify.app/courses/cosc2430/2_resources/

   Make sure to create a folder under your root directory, name it “hw5” (case sensitive), copy all your .cpp and .h file to this folder, “ArgumentManager.h” need to be included as well.

   PS: This document may have typos, if you think something illogical, please email TAs for confirmation.