

# CS2302 - Data Structures

## Spring 2019

Lab # 4

B-trees

**Deadline:** Friday, March 15, 11:59 p.m.

The program `b-tree.py` in the class webpage contains implementations of basic B-tree tree operations, including insertion, search and display. Write functions to perform the following operations:

1. Compute the height of the tree
2. Extract the items in the B-tree into a sorted list.
3. Return the minimum element in the tree at a given depth  $d$ .
4. Return the maximum element in the tree at a given depth  $d$ .
5. Return the number of nodes in the tree at a given depth  $d$ .
6. Print all the items in the tree at a given depth  $d$ .
7. Return the number of nodes in the tree that are full.
8. Return the number of leaves in the tree that are full.
9. Given a key  $k$ , return the depth at which it is found in the tree, of -1 if  $k$  is not in the tree.

As usual, write a report describing your work.