National Taiwan University, Department of Electronic Engineering

Data Structure, Spring 2020
Assignment #4

1 Problem Statement

In this homework, you're going to implement a min heap by yourself. Your BSTree needs to have the following functions: $insert()$, $delMin()$.
There are more detail descriptions for the functions.

$insert()$
: The function follows the rule of standard min heap. The key in each node is less than every child nodes. We have defined greater and less operator in node class.

$delMin()$
: The function will pop out the smallest node in the heap, and maintain the heap structure within the rest elements.

2 Input/Output Specification

We have done the input function for you. The example format is in the output file. You can check your output format by run **python3 main.py**.

3 Evaluation

We have provided a code file **main.py**. You have to fill in the class **MinHeap** which is used for testing. Write your codes in **TODO**.

1. The given $\_\_repr\_\_()$ in heap class is used for checking whether the elements satisfying the rules of heap.

2. Do not modify the interface of the functions, including node class, but you can add any function you need in MinHeap class.

3. For the element with index = i, its children are indexing $2 \times i$ and $2 \times i + 1$

4. The first element in the heap should be 0, and be treated as DUMMY node.

4 Submission

Please put your codes (including main.py or any other code files) into a directory named **studentID** and compress the directory into studentID.zip and upload studentID.zip to ceiba. The homework is due on **5/28**, at **4:00 am**.