CS310 Data Structures Fall 2019

Programming Assignment 2(b)

Building a Heap using objects of ProcessInfo Class

(50 Points)

For this part of the programming assignment you will be authoring code for Heap. You will be reusing ProcessInfo.java.

Program Execution:

1. Display the following User Menu:
    a. Enter a process
    b. Build Heap
    c. Delete Highest Priority
    d. Check Highest Priority Item
    e. Check Highest Priority
    f. Display Heap
    g. End
2. For option a: Enter the process name, process time and process priority, create an object of the ProcessInfo class.
3. For option b: Call the Heapify function to build a heap of ProcessInfo Objects and display the updated Heap Array.
4. For Option c: Display the highest priority process and delete the process from the node. Perform Down Heap after the array is altered.
5. For Option d: Display the highest priority process, but do not delete from the heap.
6. For Option e: Display the highest priority in the heap
7. Option f & g are self-explanatory.

You may enter additional processes (Option a) even after the heap is built, for this case you would perform Up Heap. Main Program loops till user wishes to exit.

Developing Code for Heaps:

The following classes will be used for the implementation:

1. MainProgram.java
2. HeapClass.java – Always implemented as Array of Objects.
3. PriorityInfo.java – Reuse from Programming Assignment 2 (a)

The Data in the nodes will be from a class ProcessInfo.java (Reuse from Part A)

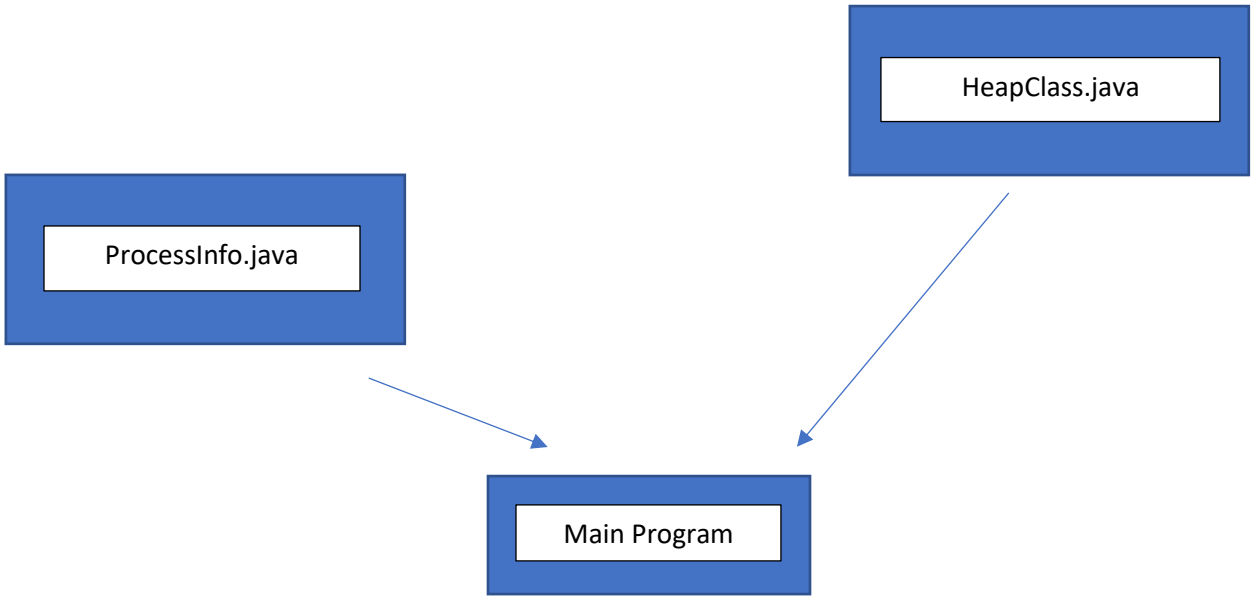
1. Process Time – Float
2. Process Priority - Integer
3. Process Name – String

What to Submit?

All code must use Generic Programming and Parameterized Types

Submit an appropriately named ZIP file containing the following:

1. ReadMe File:
   A technical document explaining all the classes used.
2. JAR file of the following classes:
   a. HeapClass.java
   b. MainProgram.java
   c. ProcessInfo.java – Same file from the Programming Assignment 2(a).



MainProgram.java