Lab Demo 08

Friday, 26 October 2018

For early birds: Turn on the PC in front of you (it will take a few minutes)

PS3 Debrief – Common Mistakes (1)

Typical common mistakes:

- WA in A/B: Not `sorting` by correct order:

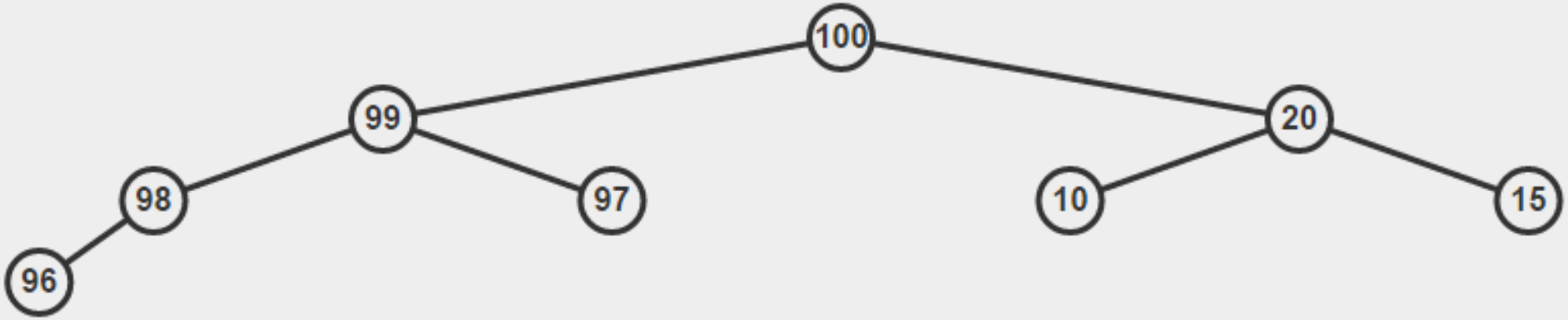
(dilation, -arrivalIndex)

- TLE in C: Using **O(n)** like method to search the entire PQ of **n** elements for a woman of a certain name

PS3 Debrief – Common Mistakes (2)

Typical common mistakes:

- WA in C: Forgot this case, see below, GiveBirth(15)



If you swap 96 (last vertex) with 15 (deleted vertex), notice that you have to do ShiftUp now, not just ShiftDown like ExtractMax :O

But the easiest implementation is IncreaseKey(15) to INF (e.g. 101 for this PS), then ExtractMax() ☺

PS3 Debrief – Our Answers (1)

The expected solution for PS3 Subtask III

- Easiest: Use more than one bBSTs (eh? bBST??)
  - One bBST/Hashmap to map woman name to dilation and arrival time
  - Another bBST to emulate the PQ
  - You can simply use map/set (Week08 topic) to solve PS3… :O :O :O
    - ArriveInHospital() is a simple bBST insertion
    - Query() is a simple bBST FindMax() operation (*set.rbegin())
    - GiveBirth() is simple: search the woman and remove her
    - IncreaseKey(): search the woman, delete her old data, reinsert her new data :O…

PS3 Debrief – Our Answers (2)

- Still easy: Lazy update using PQ (advanced topic, see CP3 page 148-149 or CP3.17b page 161-162), likely very few of you use this…
- Longest to code, which most of you do due to the lesson plan: Write your own Binary Heap class to do UpdateKey and Extract(any_pos) **(remember that this may entail calling either shiftUp and/or shiftDown to fix the binary heap property—a common mistake),** then use unordered_map (Week07 topic) or map (Week08 topic) to map woman name to index

Mock PE 3

Solve CS2040C PE Practice 1 at Mooshak

http://algorithmics.comp.nus.edu.sg/~mooshak

Select Mock PE Practice 1

Before this Lab session runs out (xx.50)!!

(or until 5pm, but you won't be able to correctly time yourself otherwise)

But use the PC in front of you (don't use own laptop!)

Gradual hints will be added in few minutes interval

All the best for next week…
If you want more exercises

- Just ask your Lab TA on what topic that you want to practice on
  - Lab TA will then show an online judge exercise on the topic with the highest demand in that lab group, and as usual, do live solving (this time without waiting for students as we may run out of time otherwise)
- Come to your assigned PL by 06.45pm to login to desktop and ensure you are not late for PE