Feedback — Priority Queues

Help Center

You submitted this quiz on **Sun 27 Sep 2015 1:50 PM EDT**. You got a score of **2.40** out of **3.00**. You can attempt again, if you'd like.

```
To specify an array or sequence of values in an answer, separate the value
s in
the sequence by whitespace. For example, if the question asks for the firs
t
ten powers of two (starting at 1), then the following answer is acceptabl
e:

     1 2 4 8 16 32 64 128 256 512

If you wish to discuss a particular question and answer in the forums, ple
ase
post the entire question and answer, including the seed (which can be used
by
the course staff to uniquely identify the question) and the explanation (w
hich
contains the correct answer).
```

Question 1

```
(seed = 695164)
Give the sequence of the keys in the array that results after
inserting the sequence of 3 keys

    31 99 13

into the following maximum-oriented binary heap of size 10:

    95 83 88 76 78 47 73 60 67 43

Your answer should be a sequence of 13 integers, separated by whitespace.
```

You entered:

```
99  83  95  76  78  88  73  60  67  43  31  47  13
```

Your Answer		Score	Explanation
99 83 95 76 78 88 73 60 67 43 31 47 13	✔	1.00	
Total		1.00 / 1.00	

Question Explanation

```
The correct answer is: 99 83 95 76 78 88 73 60 67 43 31 47 13

Here is the sequence of keys in the array after each insertion:

    95 83 88 76 78 47 73 60 67 43
31: 95 83 88 76 78 47 73 60 67 43 31
99: 99 83 95 76 78 88 73 60 67 43 31 47
13: 99 83 95 76 78 88 73 60 67 43 31 47 13
```

Question 2

```
(seed = 869198)
Give the sequence of keys in the array that results after performing 3
successive delete-the-max operations on the following maximum-oriented bina
ry heap
of size 10:

    91 80 68 76 79 57 61 40 53 67

Your answer should be a sequence of 7 integers, separated by whitespace.
```

You entered:

```
76  67  68  53  40  57  61
```

Your Answer	Score	Explanation

76 67 68 53 40 57 61	✔	1.00
Total		1.00 / 1.00

Question Explanation

```
The correct answer is: 76 67 68 53 40 57 61

Here is the sequence of keys in the array after each deletion:

                91 80 68 76 79 57 61 40 53 67
[ 91 deleted ]  80 79 68 76 67 57 61 40 53
[ 80 deleted ]  79 76 68 53 67 57 61 40
[ 79 deleted ]  76 67 68 53 40 57 61
```

Question 3

(seed = 972020)
Which of the following statements about priority queues are true? Check all that apply. Unless otherwise specified, assume that the binary heap implementation is the one from lecture (e.g., max-oriented and using 1-based indexing).

Your Answer		Score	Explanation
☑ It is possible to improve our binary heap implementation so that delMax() takes ~ 1/2 lg N compares per operation (in the worst case), where N is the number of keys in the data structure.	✖	0.00	This would violate the ~ N lg N sorting lower bound since it would yield a ~ 1/2 N lg N compare-based sorting algorithm. Recall, it is possible to construct a binary heap on N keys using at most 2N compares.
☑ The minimum heigh	✔	0.20	The height is exactly floor(lg N).

t of a complete binary tree with N nodes is ~ lg N.			
☐ In the best case, the number of compares to insert N distinct keys into an initially empty binary heap is linear.	✖	0.00	If the keys are in descending order, it takes N-1 compares.
☑ A programmer might prefer heapsort to mergesort because heapsort is faster in practice.	✖	0.00	Mergesort is typically faster in practice.
☑ The main reason to use the bottom-up heap construction to build the heap in heapsort is to use fewer compares.	✔	0.20	The bottom-up heap construction takes at most 2N compares, whereas the top-down construction could take as many as ~ N lg N compares.
Total		0.40 / 1.00	

Question Explanation