Feedback — Union Find

Help Center

You submitted this quiz on **Sat 17 Oct 2015 2:38 AM IST**. You got a score of **2.80** 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 acceptable
:

     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 = 762985)
Give the id[] array that results from the following sequence of 6 union
operations on a set of 10 items using the quick-find algorithm.

    0-9 3-4 2-9 1-6 0-6 6-5

Your answer should be a sequence of 10 integers, separated by whitespace.

Recall: our quick-find convention for the union operation p-q is to change
id[p]
(and perhaps some other entries) but not id[q].
```

You entered:

5 5 5 4 4 5 5 7 8 5

Your Answer		Score	Explanation
5 5 5 4 4 5 5 7 8 5	✔	1.00	
Total		1.00 / 1.00	

Question Explanation

```
The correct answer is: 5 5 5 4 4 5 5 7 8 5

Here is the id[] array after each union operation:

      0 1 2 3 4 5 6 7 8 9
0-9:  9 1 2 3 4 5 6 7 8 9
3-4:  9 1 2 4 4 5 6 7 8 9
2-9:  9 1 9 4 4 5 6 7 8 9
1-6:  9 6 9 4 4 5 6 7 8 9
0-6:  6 6 6 4 4 5 6 7 8 6
6-5:  5 5 5 4 4 5 5 7 8 5
```

Question 2

```
(seed = 956616)
Give the id[] array that results from the following sequence of 9 union
operations on a set of 10 items using the weighted quick-union algorithm fr
om lecture.

    3-0 4-7 0-8 2-6 3-6 9-1 4-9 2-5 4-0

Your answer should be a sequence of 10 integers, separated by whitespace.

Recall: when joining two trees of equal size, our weighted quick union conv
ention is to
make the root of the second tree point to the root of the first tree. Also,
 our weighted
quick union algorithm performs union by size (number of nodes) -  not union
 by height -
and does not do path compression.
```

You entered:

```
3 9 3 3 3 3 2 4 3 4
```

Your Answer		Score	Explanation
3 9 3 3 3 3 2 4 3 4	✔	1.00	
Total		1.00 / 1.00	

Question Explanation

```
The correct answer is: 3 9 3 3 3 3 2 4 3 4

Here is the id[] array after each union operation:

      0 1 2 3 4 5 6 7 8 9
3-0:  3 1 2 3 4 5 6 7 8 9
4-7:  3 1 2 3 4 5 6 4 8 9
0-8:  3 1 2 3 4 5 6 4 3 9
2-6:  3 1 2 3 4 5 2 4 3 9
3-6:  3 1 3 3 4 5 2 4 3 9
9-1:  3 9 3 3 4 5 2 4 3 9
4-9:  3 9 3 3 4 5 2 4 3 4
2-5:  3 9 3 3 4 3 2 4 3 4
```

```
4-0:  3 9 3 3 3 3 2 4 3 4
```

Question 3

```
(seed = 578637)
Which of the following id[] array(s) could be the result of running the wei
ghted quick union
algorithm on a set of 10 items? Check all that apply.

Recall that our weighted quick union algorithm uses union by size (number o
f nodes)
and not union by height.
```

Your Answer		Score	Explanation
☑ `4 5 9 5 6 6 6 5 6 5`	✖	0.00	Size of tree rooted at parent of 5 < twice the size of tree rooted at 5
☑ `0 1 2 4 4 5 6 4 2 9`	✔	0.20	4-7 3-7 2-8
☐ `5 6 2 4 5 7 0 7 6 4`	✔	0.20	Height of forest = 4 > lg N = lg(10)
☐ `4 9 0 0 6 0 9 0 0 0`	✔	0.20	The id[] array contains a cycle: 4->6->9->0->4
☑ `3 8 7 7 8 8 7 8 8 8`	✔	0.20	8-9 7-2 2-6 3-0 9-5 9-1 0-7 4-5 4-2
Total		0.80 / 1.00	

Question Explanation