Feedback — Stacks and Queues

Help Center

You submitted this quiz on **Sun 13 Sep 2015 9:59 AM EDT**. You got a score of **2.00** 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 = 94244)
Suppose that an intermixed sequence of 10 push and 10 pop operations are pe
rformed
on a LIFO stack. The push operations add the values 0 through 9 to the stac
k, in the
order given; the intermixed pop operations delete and print out the return
values
Which of the following output sequence(s) could occur? Check all that appl
y.
```

Your Answer	Score	Explanation

☐ 1 2 4 0 6 5 8 7 9 3	✔	0.20	When 4 is pushed, both 0 and 3 are still on the stack. So, 3 would be popped before 0.
☑ 2 7 6 5 4 8 9 3 1 0	✔	0.20	0 1 2 - 3 4 5 6 7 - - - - 8 - 9 - - - -
☑ 3 2 1 0 4 5 6 7 8 9	✔	0.20	0 1 2 3 - - - - 4 - 5 - 6 - 7 - 8 - 9 -
☐ 2 1 3 5 7 4 6 0 8 9	✔	0.20	When 7 is pushed, both 4 and 6 are still on the stack. So, 6 would be popped before 4.
☑ 1 0 2 4 3 5 9 8 7 6	✔	0.20	0 1 - - 2 - 3 4 - - 5 - 6 7 8 9 - - - -
Total		1.00 / 1.00	

Question Explanation

Question 2

(seed = 781573)
Suppose that an intermixed sequence of 10 enqueue and 10 dequeue operations are performed
on a FIFO queue. The enqueue operations add the values 0 through 9 to the data structure,
in the order given; the dequeue operations delete and print out the return values.
Which of the following output sequence(s) could occur? Check all that apply.

Your Answer	Score	Explanation

☐ `0 1 2 3 4 5 6 7 9 8`	✔	0.20	The ninth item enqueued is 8 but the ninth item dequeued is 9.
☐ `0 1 2 7 9 5 8 3 6 4`	✔	0.20	The fourth item enqueued is 3 but the fourth item dequeued is 7.
☐ `0 1 2 3 4 5 8 7 9 6`	✔	0.20	The seventh item enqueued is 6 but the seventh item dequeued is 8.
☐ `0 1 2 3 6 7 8 9 4 5`	✔	0.20	The fifth item enqueued is 4 but the fifth item dequeued is 6.
☑ `0 1 2 3 4 5 6 7 8 9`	✔	0.20	0 - 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 -
Total		1.00 / 1.00	

Question Explanation

Question 3

```
(seed = 326870)
Consider an object of type MysteryBox that stores N items of type long
in a doubly-linked list of N nodes, referenced by first.

    public class MysteryBox {
        private Node first;

        private static class Node {
            private long item;
            private Node next;
            private Node prev;
        }
```

```
        ...
    }
```

Using the 64-bit memory cost model from the lecture, how many bytes does it use as a function of N?
Include all memory referenced by the object and use tilde notation to simplify your answer.
For example, enter ~ 4N if the number of bytes as a function of N is 4N + 32.

Note that an object from a static nested class does not store a reference to the
instance of its enclosing class, so there is no 8-byte inner class overhead here.

You entered:

~ 48N

Your Answer		Score	Explanation
~ 48N	✖	0.00	
Total		0.00 / 1.00	

Question Explanation

A correct answer matches the regular expression: \s*~?\s*40\s*N\s*
For example, the following is a correct answer: ~ 40N
Below is a detailed accounting:

```
public class MysteryBox {                    //       16 (object overhead)
    private Node first;                      //        8 (reference)

    private static class Node {              //       16 (object overhead)
        private long item;                   //        8 (long)
        private Node next;                   //        8 (reference)
        private Node prev;                   //        8 (reference)
                                             //        0 (padding to round up to a multiple of 8)
```

```
    }                                                    -------
                                                        24 + 40N  ~ 40N

    ...
}
```