My understanding of classes (OO objects) in scam have the syntax of

```lisp
(define stk (Stack))
(stk 'push x)
(stk 'pop)
(stk 'peek)
```

And if you still want us to use

```lisp
(define stk (Stack))
push stk x
(pop stk)
speek stk
```

then push, pop, etc... are not methods but rather functions correct?

---

Yes, these are functional stacks, no change of state. When a stack normally would be modified (say push and pop), a new stack is returned instead. Same for a queue.

---

Is it safe to assume we can modify the code from notes section and replace set with define

---

I'm pretty sure replacing set with define is not going to work (although I can't say for sure).
"All methods must work in amortized constant time"

Does this mean functions like "append" and "length" cannot be used? I'm not entirely sure how they are implemented in Scam/Scheme.

Subject: Re: Exercise 3
Posted by lusth on Sat, 08 Oct 2016 13:17:03 GMT

Append and length are theta(n). You could use these if you can guarantee enough constant time operations to average out their linear costs.

Subject: Re: Exercise 3
Posted by padietl on Sat, 15 Oct 2016 19:13:46 GMT

In this:

```
(define (loop stack queue)
  (define x (readInt))
  (if (eof?)
      (list stack queue)
      (loop (push stack x) (enqueue queue x)))
)

(define (popper s)
  (cond
   (!= (ssize s) 0)
   (inspect (speek s))
   (popper (pop s))
  )
)

(define (dequeuer q)
  (cond
   (!= (qsize q) 0)
   (inspect (speek q))
   (dequeuer (dequeue q))
  )
)```
In dequeueur you need to change (inspect (speek q)) to (inspect (qpeek q))

Also in this:

```
(define oldstream (setPort (open "data.ints" :read)))
(define data (loop (Stack) (Queue)))
(popper (car data))
(dequeuer (cadr data))
(setPort oldStream)
```

:read needs to be 'read

---

Subject: Re: Exercise 3
Posted by jrmelton on Mon, 17 Oct 2016 20:21:02 GMT

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The instructions state: "Note: any method that would normally modify the state of the data structure has to return a new data structure, instead." Is a "new data structure" a new Stack instance or any kind of data structure? My understanding is that the push function is just going to return a pointer to the new head of the stack, not a new Stack instance...is this correct?

---

Subject: Re: Exercise 3
Posted by lusth on Mon, 17 Oct 2016 21:05:05 GMT

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A new stack instance is returned. If all you need for your stack is the head pointer, then the new head pointer would be returned (although I'm not sure how you calculate the size within the specified time bound with just a head pointer).

---

Subject: Re: Exercise 3
Posted by jrmelton on Mon, 17 Oct 2016 22:03:35 GMT

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ok so if my Stack class is just an empty list, when push() is called I'm currently just using cons to connect the new element with the stack/list and it's returning a pointer to the newly created list. I'm not actually calling my stack class and creating another instance of it, correct?
If stack is literally an alias for a list as in

(define (Stack) nil)

Then I'd think just returning the result of consing the new value onto the current list would be equivalent to creating a new Stack.

That's exactly my thinking, I just want to make sure it's ok with Dr. Lusth

When our code is being tested, are we guaranteed that nothing will be passed in when creating a stack and/or queue? I'm debating on making mine variadic to help with run time.

My stack and queue classes are variadic and I believe all of the methods run in amortized constant time, is it ok for our classes to be variadic?

lusth wrote on Thu, 29 September 2016 06:15
Yes, these are functional stacks, no change of state. When a stack normally would be modified (say push and pop), a new stack is returned instead. Same for a queue.

In test scrip for assignment 3,
(inspect (speek (pop (push (push (Stack) 2) 1)))))
(printin "It should be 1")

Are we allowed to implement like this?

Does it suppose to be something like

(inspect (((((Stack) 'push 2) 'push 1) 'pop) 'peek))
(printin "It should be 1")

Subject: Re: Exercise 3
Posted by jrmelton on Sat, 22 Oct 2016 05:20:12 GMT
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All of the "methods" are actually functions. Meaning they are called with a Stack/Queue as an argument. You've implemented it where they are methods, not functions.

Subject: Re: Exercise 3
Posted by lusth on Sat, 22 Oct 2016 20:20:39 GMT
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padietl wrote on Mon, 17 October 2016 17:11

If stack is literally an alias for a list as in

(define (Stack) nil)

Then I'd think just returning the result of consing the new value onto the current list would be equivalent to creating a new Stack.

It would be fine, except I don't see how you calculate the size of the stack in constant time.