Prep 4 quiz: ADTs

Started: Oct 1 at 1:58pm

Quiz Instructions

Question 1 — 1 pts

Select all of the true statements from the list below.

- [x] An abstract data type defines a kind of data to be stored and the allowed operations on that data.
- [x] A data structure exists as concrete code, while an ADT is a conceptual definition of a type of data and its operations.
- [ ] Every programming language provides the same built-in data structures.
- [ ] A data structure can only implement a single abstract data type.

Question 2 — 1 pts

Match each operation on the right-hand side with its corresponding abstract data type.

Set/Multiset	remove a specified value
List	access a value by its index
Map	access a value by its correspondi
Iterable	Iterate through all values one at :

Question 3 — 1 pts

Which of the following are operations that we defined for the **Stack ADT**?

- ☐ length
- ☑ push
- ☐ enqueue
- ☑ is_empty
- ☐ extend
- ☐ iterate
- ☑ pop

Question 4 — 0 pts

Which of the following are operations we defined for the **Queue ADT**?

- ☐ pop
- ☑ dequeue
- ☑ enqueue
- ☑ is_empty
- ☐ append
- ☐ size

Question 5 — 1 pts

Suppose we have correctly implemented our Stack class. What will be the output of the following?

```
s = Stack()
s.push('Paul')
s.push('Karen')
s.push('Michelle')
print(s.pop())
s.push('Tom')
print(s.pop())
print(s.pop())
print(s.pop())
```

- ○
```
Michelle
Tom
Michelle
Karen
Paul
```

- ○
```
Michelle
Paul
Karen
Tom
```

- ◉
```
Michelle
Tom
Karen
Paul
```

- ○
```
Paul
Karen
Michelle
Tom
```

Question 6 1 pts

Suppose we have correctly implemented our Queue class. What will be the output of the

following?

```
q = Queue()
q.enqueue('Paul')
q.enqueue('Karen')
q.enqueue('Michelle')
print(q.dequeue())
q.enqueue('Tom')
print(q.dequeue())
print(q.dequeue())
print(q.dequeue())
```

- ○
```
Tom
Michelle
Karen
Paul
```

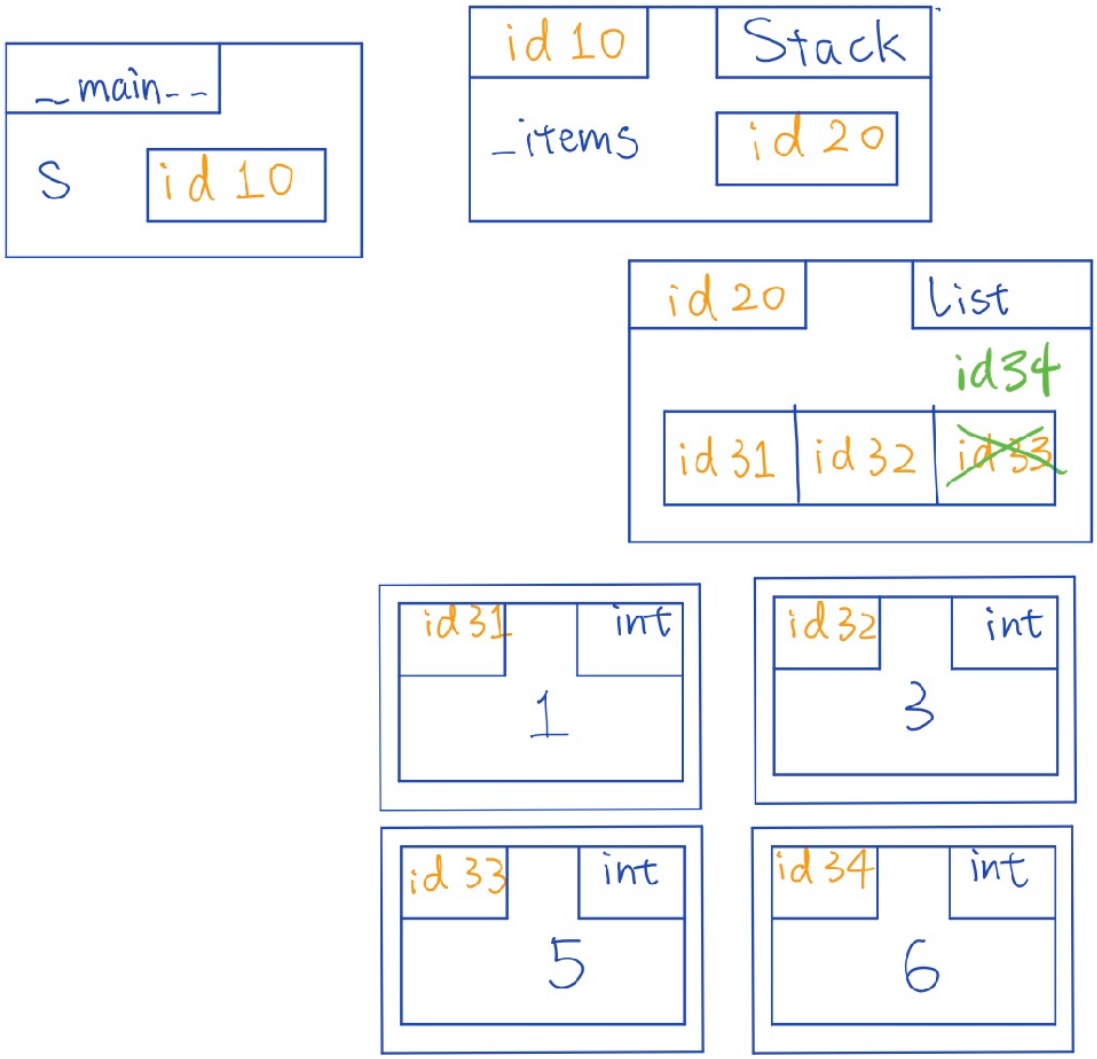
- ◉
```
Paul
Karen
Michelle
Tom
```

- ○
```
Michelle
Tom
Karen
Paul
```

- ○
```
Paul
Karen
Tom
Michelle
```

Question 7 — 1 pts

Suppose we have imported the stack class with the implementation we gave in the readings, and we are executing some code. The state of memory is as depicted in this memory model diagram:



Which one of the following fragments of code could have lead to this state of affairs?

```
s = Stack()
s.push(1)
s.push(3)
s.push(6)
```

```
s = Stack()
s.push(1)
s.push(3)
s.push(5)
s[-1] = 6
```

```
s = Stack()
s.push(1)
s.push(3)
s.push(5)
s.pop()
s.push(6)
```

```
s = Stack()
s._items = [1, 3, 5]
s[-1] = 6
```

```
s = Stack()
s.push(5)
s.pop()
s.push(6)
s.push(3)
s.push(1)
```

Question 8

1 pts

Suppose we have two stacks: the first stack `s1` has some values in it, while the second stack `s2` is empty.

Suppose we run the following code:

```
while not s1.is_empty():
    s2.push(s1.pop())
```

After running this code, `s1` is empty. What do we know about the contents of `s2`?

- Impossible to tell from the information provided.
- s2 contains only None values, because Stack.pop doesn't actually return anything.
- s2 is empty.
- This code would not finish successfully; an error would be raised while running the code.

- (●) s2 has the same values stored in the reverse order as s1 originally had them.
- ( ) s2 has the same values stored in the same order as s1 originally had them.

Question 9 — 1 pts

Suppose we have two queues: the first queue `q1` has some values in it, while the second queue `q2` is empty.

Suppose we run the following code:

```
while not q1.is_empty():
    q2.enqueue(q1.dequeue())
```

After running this code, `q1` is empty. What do we know about the contents of `q2`?

- (●) q2 has the same values stored in the same order as q1 originally had them.
- ( ) q2 has the same values stored in the reverse order as q1 originally had them.
- ( ) q2 is empty.
- ( ) q2 contains only None values, because Queue.dequeue doesn't actually return anything.
- ( ) This code would not finish successfully; an error would be raised while running the code.
- ( ) Impossible to tell from the information provided.

Quiz saved at 2:10pm Submit Quiz