ADVANCED TOPICS

7

10 PTS

NAME Mayank V

PERIOD ____

Linked Lists

1) **What is included in a linked list node?**

I a reference to the next node
II an array reference
III a data element

a) I
b) II
c) II and III
d) I and III

2) **Consider the following code snippet:**

```
LinkedList<String> words =
            new LinkedList<String>();
words.addFirst("123");
words.addLast("456");
words.addFirst("789");
System.out.print(words.removeLast());
System.out.print(words.removeFirst());
System.out.print(words.removeLast());
```

What does this code print?

a) 123456789
b) 789123456
c) 123789456
d) 456789123

3) **Insert the missing code in the following code fragment. This fragment is intended to add a new node to the head of a linked list:**

```
public class LinkedList
{
   . . .
   public void addFirst(Object element)
   {
      Node newNode = new Node(); 1
      newNode.data = element;
      _________ 2
      _________ 3
   }
   . . .
}
```

a)
```
first = newNode;
newNode.next = first;
```

b)
```
newNode.next = first;
first = newNode;
```

c)
```
first = newNode.next;
newNode.next = first;
```

d)
```
first = newNode.next;
newNode = first;
```

4) **Insert the missing code in the following code fragment. This fragment is intended to remove a node from the head of a linked list:**

```
public class LinkedList
{
   . . .
   public Object removeFirst()
   {
      if (first == null) { throw new
NoSuchElementException(); }
      Object element = first.data;
      _________________
      _________________
   }
   . . .
}
```

a)
```
first = first.next;
return element;
```

b)
```
first.next = first;
return element;
```

c)
```
first = element.next;
return element;
```

d)
```
first = element.next;
return null;
```

5) **Using the textbook's implementation of a linked list, which of the following statements about adding a node to the middle of a linked list is correct?**

a) The new node will be added before the last visited node.
b) The `position.next` reference will be updated to point to the new node.
c) The `remove` method can be called immediately before or after adding the new node.
d) The `previous` reference must be updated when adding the new node.

6) **Which of the following operations is least efficient in a `LinkedList`?**

a) adding an element in a position that has already been located
b) linear traversal step
c) removing an element when the element's position has already been located
d) random access of an element

7) **What type of access does the use of an iterator with a `LinkedList` provide for its elements?**

a) random
b) semi-random
c) sequential
d) sorted

8) **Which of the following statements about a linked list and its iterator is <u>NOT</u> correct?**

a) The list is empty if the linked list's `first` node reference is null.
b) The iterator is at the end of the list if the `position.next` reference is null.
c) The iterator is at the beginning of the list if the `previous` reference is null.
d) The iterator is at the first node of the list if its `position` reference is null.

9) **Using the textbook's implementation of a singly linked list and linked list iterator, the following steps are required to remove a node from the middle of a linked list.** ***Place these steps into the order in which they should be performed.***

I The preceding node's next reference must be updated to skip the removed node.
II The iterator's position reference must be set to the previous reference.
III The previous reference must be checked to see if it is equal to the position reference.

a) III, I, II
b) I, III, II
c) II, I, III
d) III, II, I

10) **Consider the following code snippet:**

```
LinkedList<String> words = new
LinkedList<String>();
words.addFirst("xyz");
words.addLast("jkl");
words.addLast("def");
System.out.print(words.removeFirst());
System.out.print(words.removeLast());
System.out.print(words.removeLast());
```

What does this code print?

a) `xyzjkldef`
b) `defxyzjkl`
c) `xyzdefjkl`
d) `defjklxyz`

D B A

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
D	B	B	A	A	D	C	D	D	C