Midterm Review Question Set

True or False questions

1. Statements beginning with the keyword return cause an exit from the method.

2. A class is a named description for a group of entities that have the same characteristics.

3. Each class that implements an interface must provide the complete definition of all methods declared in the interface.

4. A major reason for the popularity of object-oriented programming is that it enables programmers to reuse previously written code saved as classes.

5. Because an ArrayList<E> is an indexed collection, you can access its elements using a subscript.

6. The ArrayList<E> has the limitation that the add and remove methods operate in $O(n^2)$ time.

Multiple choice questions

1. The ____ is used to write a decision with conditions that select the alternative to be executed.
a. if ... else
b. switch
c. while
d. for

2. ____ are program errors that occur during the execution of a program.
a. Packages
b. Tokenizers
c. Streams
d. Exceptions

3. If you define one or more constructors for a class, you must also explicitly define the ____, or it will be undefined for that class.
a. visibility
b. no-parameter constructor
c. data type
d. escape sequence

4. The call to ____ invokes the constructor for the current class whose parameter list matches the argument list.

a. super()
b. super
c. this()
d. abstract

5. A data field (or method) with ____ visibility can be accessed in either the class defining it, in any subclass of that class, or any class in the same package.
a. private
b. protected
c. public
d. instanceof

6. Which of the following statements is correct?
a. is-a and has-a relationships cannot be combined.
b. An abstract class can be instantiated.
c. An abstract class cannot declare abstract methods.
d. In Java, a variable of a superclass type can reference an object of a subclass type.

7. Which of the following is considered a visibility modifier in Java?
a. private
b. Inherit
c. Superclass
d. String

8. Which of the following can be done with an array object?
a. Traverse the list structure without having to manage a subscript.
b. Increase or decrease its length, which is fixed.
c. Add an element at a specified position without shifting the other elements to make room.
d. Remove an element at a specified position without shifting the other elements to fill in the resulting gap.

9. A(n) ____ is a data structure that contains a data item and one or more links.
a. collection
b. node
c. iterator
d. interface

10. You could create a circular list from a single-linked list by executing the statement ____.
a. tail.next = head;
b. head.prev = tail;
c. tail.head = next;
d. head.tail = prev;

Short answer questions

1. What is the superclass of all Java classes?

2. What is overriding? What is overloading?

3. What is a Syntax error?

4. List the following functions according to increasing order of growth rate. (c is a positive number)

n^2 nlgn n lgn 2^n c

6. Which java package contains ArryList<E> class?

7. Java programming.
a. In the following HighArray calss, add a method that will return the 2nd largest value in the array.

```
class HighArray
  {
  private long[] a;                 // ref to array a
  private int nElems;               // number of data items

        ...

        public long 2ndLargest()
        {
        //add your code

        }
        ...
  }
```

b. Draw the arraylist that will be created after the following statements?

```
ArrayList<Integer> myList = new ArrayList<Integer>();
myList.add(5);
myList.add(4);
myList.add(3);
myList.add(1);
myList.add(3,2);
myList.remove(1);
myList.set(1,8);
```

c. Assume we have defined the Node class and the LinkList class. Fill the insertFirst() and deleteFirst() methods.

```
class Node
{
	int data;
	Node next;

	Node(int data)
	{
		this.data = data;
		next = null;
	}

}

class LinkList
{
	Private Node head; //first is the head of the linked list
	...
	public void insertFirst(int data)
	{
		//add your code here









	}

}
```