SUMMER 2007 CS1316 OPTIONAL QUIZ 4

NAME: ……

PRISM ID: ……..

GRADING TA (Circle one)**:**   **Kristin**   **Rory**

_____ 1. Which of the following is **NOT** true about a constructor of a class?
   a. A constructor must have the same name as the class.
   b. A constructor does not have a return type.
   c. A constructor must always be declared within a class (no default constructor is provided).
   d. A constructor initializes an instance of a class.

_____ 2. Why are modifiers, or getters and setters such as getName() and setName(), necessary for some variables?
   a. Modifiers are the only way to access instance variables with public visibility from outside of the class.
   b. Modifiers are the only way to access instance variables with private visibility from outside of the class.
   c. Modifiers are the only way to access static instance variables from outside of the class.
   d. Modifiers are the only way to access instance variables with public visibility from a super class.

_____ 3. Having fixed length is a characteristic of a _____ structure.
   a. Dynamic
   b. Static

_____ 4. A _____ data structure takes up a fixed amount of space in memory.
   a. Dynamic
   b. Static

_____ 5. A _____ data structure is easier to index than a _____ structure.
   a. Dynamic, Static
   b. Static, Dynamic

_____ 6. It is harder to insert and delete in the middle of a _____ data structure than in _____ one
   a. Dynamic, Static
   b. Static, Dynamic

_____ 7. Explain the process of adding another element to an array that is already full:
   a. Just add the element. The array is a dynamic structure and can easily accommodate more elements.
   b. Create another array of greater size, copy everything from the old shorter array, and then add the new element.

c.   None of the above.

_____ 8.   The main difference between a tree and a graph is that:
   a.   A tree **may** have cycles, while a graph **must** have cycles.
   b.   A tree **may** have cycles, while a graph **cannot** have cycles.
   c.   A tree **cannot** have cycles, while a graph **may** have cycles.
   d.   A tree **cannot** have cycles, while a graph **must** have cycles.

_____ 9.   A graph is a type of tree.
   a.   True
   b.   False

_____ 10. What is true of both abstract classes and interfaces?
   a.   Both can contain regular methods.
   b.   Both cannot be instantiated.
   c.   Both use the Java keyword extends.
   d.   Both require its child class to override all of its methods.

_____ 11. Abstract classes use the Java keyword _____, while interfaces use _____ .
   a.   throws, implements
   b.   extends, throws
   c.   extends, implements
   d.   implements, extends

_____ 12. Abstract classes and interfaces both cannot be instantiated.
   a. True.
   b. False.

_____ 13. Abstract classes and interfaces both can contain regular, non-abstract methods.
   a.   True.
   b.   False.

_____ 14. Abstract classes and interfaces both require its child class or implementing class to override all of its methods (By require, we mean that Java will throw an error if you do not).
   a.   True.
   b.   False.

_____ 15. Which of the following describes an in-order traversal?
   a.   PLR; Visit Parent then Left child then Right child.
   b.   LPR; Visit Left child then Parent then Right child.
   c.   LRP; Visit Left child then Right child then Parent.

SUMMER 2007 CS1316 OPTIONAL QUIZ 4

_____ 16. Which of the following describes a post-order traversal?
   a. PLR; Visit Parent then Left child then Right child.
   b. LPT; Visit Left child then Parent then Right child.
   c. LRP; Visit Left child then Right child then Parent.

_____ 17. Which of the following describes a pre-order traversal?
   a. PLR; Visit Parent then Left child then Right child.
   b. LPT; Visit Left child then Parent then Right child.
   c. LRP; Visit Left child then Right child then Parent.

_____ 18. For a Stack, insertion is at the _____ and removal at the _____.
   a. First (head), last (tail)
   b. Last (tail), first (head)
   c. Last (tail), last (tail)
   d. First (head), first (head)
   e. Both a and b, because it does not matter which occurs at what end as the operations occur at different ends.
   f. Both c and d, because it does not matter which occurs at what end as the operations occur at the same end.

_____ 19. For a Queue, insertion is at the _____ and removal at the _____.
   a. First (head), last (tail)
   b. Last (tail), first (head)
   c. Last (tail), last (tail)
   d. First (head), first (head)
   e. Both a and b, because it does not matter which occurs at what end as the operations occur at different ends.
   f. Both c and d, because it does not matter which occurs at what end as the operations occur at the same end.

_____ 20. In continuous simulations, time is advanced from event to event.
   a. True.
   b. False.

_____ 21. A circular LinkedList is a LinkedList where the last node points back to the first node.
   a. True.
   b. False.

SUMMER 2007 CS1316 OPTIONAL QUIZ 4

Consider the following code for questions 22 -25:

```
1  public class Person{
2  String name;
3  public Person(String name){
4  this.name = name;
5  }
6  public void speak(){
7  System.out.println("My name is "+name+". I am a Person.");
8  }
9  }
10 public class Student extends Person{
11 String major;
12 public Student(String name, String major){
13 super(name);
14 this.major = major;
15 }
16 public void speak(){
17 super.speak();
18 System.out.println("My major is "+major+".");
19 }
20 }
```

_____ 22. What is happening in line 13?

   a. The Student class is calling a constructor in the parent class.

   b. The Student class is calling a method (but not a constructor) in the parent class.

   c. The Student class is calling a constructor in the child class.

   d. The Student class is calling a method (but not a constructor) in the child class.

_____ 23. What is happening in line 17?

   a. The Student class is calling a constructor in the parent class.

   b. The Student class is calling a method (but not a constructor) in the parent class.

   c. The Student class is calling a constructor in the child class.

   d. The Student class is calling a method (but not a constructor) in the child class.

_____ 24. What will print out in the interaction pane, after the following lines of code:

```
Student steve = new Student("Steve", "ISYE");
steve.speak();
```

   a. My major is ISYE.

   b. My name is Steve. I am a Person.
       My major is ISYE.

   c. My name is Steve. I am a Person.

   d. Some exception will occur.

4

_____ 25. What will print out in the interaction pane, after the following lines of code:

```
Person lucy = new Student("Lucy", "EE");
lucy.speak();
```

     a. `My name is Lucy. I am a Person.`

     b. `My major is EE.`

     c. `My name is Lucy. I am a Person.`
        `My major is EE.`

     d. Some exception will occur.