Written Final1

Section 1: TRUE / FALSE 1 pt each

1) When you extend a class you are required to write a constructor.

2) By using the keyword super you can invoke a method that resides in your parent's class

3) Implementing an interface and extending an abstract class both require you to write at least one method.

4) You can extend multiple classes - i.e. your new class can have multiple immediate parents

5) You can implement multiple interfaces.

6) You can declare all your constuctors as private.

7) Polymorphism means wherever a reference (non primitive) type is expected I can use an object of the same type or its parent type.

8) Polymorphism means anywhere any primitive is expected I can use any object type and it will automatically and convert between any type to any type.

9) Autoboxing means anywhere any specified object type is required, I can substitute a sub type (child class) for the original type expected.

10) All classes have Object (capital "O") type as thier ancestor.

11) The search operation on a HashMap is faster than a search into an unsorted array.

12) The search operation on a HashMap is faster than a search into an sorted array.

13) The search for an element in a HashSet is faster that a search on a sorted array.

14) The Number classes (Integer, Float, Byte etc) wrap up a primitive value inside the object.

15) When you pass a reference variable into a method, you cannot change the actual value inside that ref var because you were just passing a copy of the value.

Section 2: Free response 2 pts each

1) What is the difference betwen deep and shallow copy?

2) What benefits does inheritence bring to a Java programmer programmer?

3) Why should the data members of a class be private instead of public?

4) Name one difference between a checked and an unchecked exception.

5) Describe one way that an interface differs from an abstract class.

6) Name a Java class (class, not interface) that is good for representing members of a group and doing matematical operations such as membership, intersection or union.

7) Name one difference between a HashSet and a HashMap.

8) Name one property/attribute/functionality that HashMap and Hash set do not support.

9) Why MUST hashSet and HashMap implement the equals/equality relation property?

10) Name one property about the keys in a hashmap that must be true.

SHORT ANSWER QUESTIONS

11) Suppose you are implementing an interface and you are writing one of the methods that is required by that interface.

Further assume you have a line of code in that required method that could throw a checked exception - i.e. you are opening a file. In order to appease the compiler requirement that you do something about checked exceptions - what could you do to make it compile and run correctly?

a) Just tack a ìthrows Exceptionî clause onto the end of the signature of the method you are writing

b) wrap the code that opens the file in a try/catch block

c) either (a) or (b) would work

12) If I wanted to store every word in the English language along with its unique primary definition, and then

be able to look up a word's definition if given the word to look up. Furthermore I would like be able to print out

that dictionary in a sorted list of words with each word's definition on the same line as the word.

CIRCLE the optimal container.

(a) ArrayList (b) LinkedList (c) HashSet (d) HashMap (e) TreeSet (f) TreeMap

WHY?

13) You are the senior software architect for the new one world govt. (1WG) in 2038.

This 1WG has implanted a scanable chip into the body of every human.

Every building or area that a human passes into/out-of has a scanner placed and an armed 1WG-Police monitoring the scanner.

The scanner reads the chip's unique ID code and looks it up on the NSA's 1WGserver.

Once the ID is confirmed as an existing ID, it is used to retrieve a value associated with every ID.

That value represents what action (if any) should be taken against person who is being scanned (ignore, arrest, shoot on sight, obliterate with a drone strike, etc.).

There are about 8 billion humans being scanned repeatedly all day long.

In order to minimize response time since the 1WG-PD officer may only have seconds to execute the action prescribed by the 1WGserver.

CIRCLE the optimal container.

(a) ArrayList (b) LinkedList (c) HashSet (d) HashMap (e) TreeSet (f) TreeMap

WHY?

14) Assume you have two classes written as follows. Both are in separate files named Parent.java and Child.java respectively.

public class Parent

{

private int x;

public Parent( int x )

{

this.x = x;

}

}

public class Child extends Parent

{

public int y;

public Child( int y )

{

this.y = y;

}

}

In a file named Tester.java you have this main method

public static void main( String args[] )

{

Child c = new Child();

c.y = 25;

System.out.println( c.y );

}

What will be the outcome of this Tester program? Circle your answer and fill in the "because:"

(You get NO credit for circling the right answer if your explanation is not correct)

a) It will not compile because:

b) It will crash because:

c) It will print 25