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date Tue 02/18 11:00AM	points 100		S56 w2
nay not collaborate on this exam toom.	with anyone. If you need to use the restroom, you must leave your cell phone with the exam proctor b		mw
<ul><li>You are permitted</li><li>This sheet will be</li></ul>	you turned in ALL pages; look for "End of Exam" on the last paged book, closed notes, closed mouth, cell phone off.  one sheet of paper (max size 8.5x11") on which to write note collected with the exam, and might not be returned.	es.	
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Map<String,Object> a = new Map<String,Object>();

TreeMap<String,Long> c = new TreeMap<String,Long>();

TreeMap<String,Object> d = new Map<String,Object>();  $(3 \text{ pts}) \square \text{ Valid } \square \text{ Invalid}$ 

Map<String,String> b = new TreeMap<String,String>();  $_{(3 \text{ pts})} \square$  Valid  $\square$  Invalid

(3 pts)  $\square$  Valid  $\square$  Invalid

(3 pts)  $\square$  Valid  $\square$  Invalid







- 3. Page 2 of <u>Handout A</u> has some useful reference material for the problems below.
- a. (10 pts) Suppose you have a class Student that does not currently implement the interface Comparable<Student>. This class has a private data member of type int called perm.

There is no getter for perm. Note that you *do not need one* to solve this problem, and the solution does not involve writing one.

To make the class implement Comparable < Student >, you'd have to change the first line:

- from: public class Student {
- to: public class Student implements Comparable<Student> {

You'd also need to add one method. Write that method completely, as it would appear inside class Student. Assume that the "natural order" of Student objects is to be sorted by perm in increasing order.

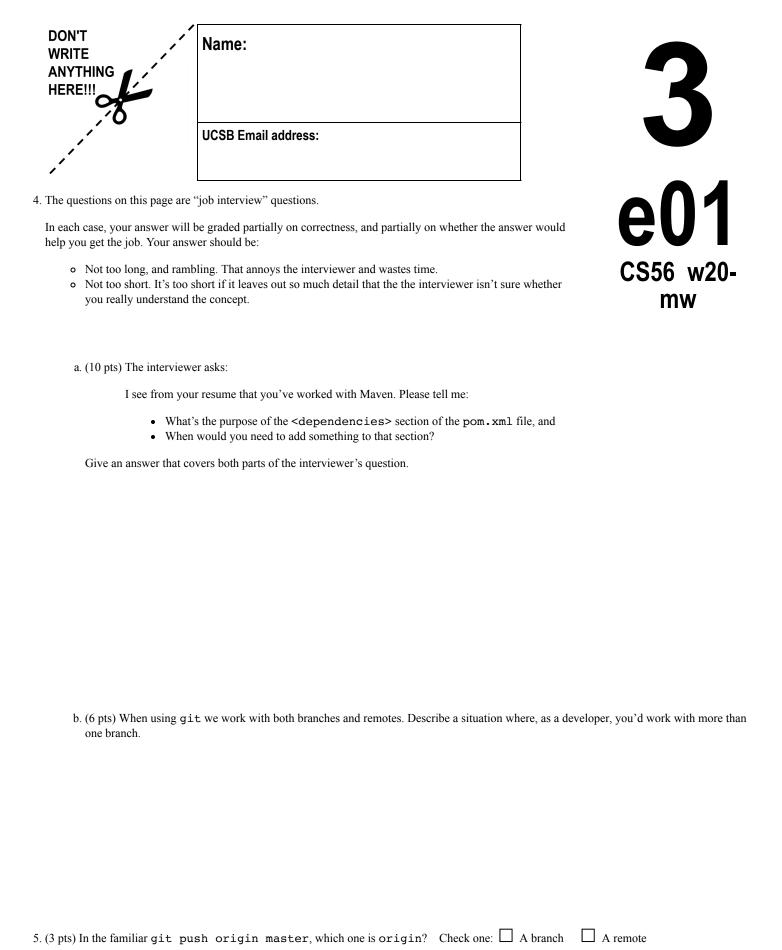
b. (10 pts) Suppose you have a class Book that:

- does NOT implement Comparable < Book >.
- has a method public String getTitle()

Further, suppose that books is a reference to an ArrayList<Book> instance.

Write the code to sort books by title, using a built-in sort method of java.util.Collections and a suitable Comparator implemented as a lambda function.

You don't need to write a complete method or class, just the code needed, assuming that books is already declared and instantiated.





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6. For this question, you need page 1 of <u>Handout A</u> and page 1 of <u>Handout B</u>.

There, you will find code for these files: Beverage.java, Edible.java, Food.java, FreeCandy.java and Product.java. These are classes used by a grocery store known as "Trader Bobs".

**ANYTHING** HERE!!!

Some of these methods will compile and run, while others will not.

Indicate, for each method, whether it compiles or not, in context of the code on page 1 of Handout A and page 1 of <u>Handout B</u> and assuming the methods appear inside this class:

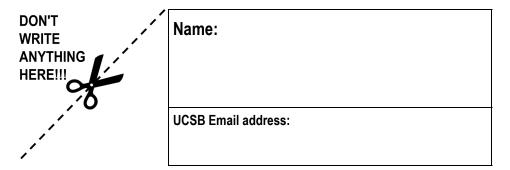
```
public class TraderBobs {
 // methods appear here
}
```

You do not need to indicate the output, or the reason; only whether it does, or does not compile.

a. (3 pts)

```
Will it compile?
     public static void TB40 () {
        Food f40 = new Food(199, "Gummi Bears", 520, 5);
                                                               System.out.println(f40.getWeight());
      }
b. (3 pts)
                                                                   Will it compile?
     public static void TB41 () {
        Product b41 = new Beverage(89, "Diet Coke", 0, 12.0);
                                                                      Yes
        System.out.println(b41.getPrice());
      }
                                                                      No
c. (3 pts)
                                                                    Will it compile?
     public static void TB42 () {
        Beverage b42 = new Beverage(89, "Diet Coke", 0, 12.0);
                                                                    ☐ Yes
        System.out.println(b42.getFluidOunces());
      }
                                                                    □ No
d. (3 pts)
```

public static void TB43 () {	Will it compile?
<pre>FreeCandy f43 = new FreeCandy(50); System.out.println(f43.getName());</pre>	☐ Yes
}	□ No



7. Continued from previous problem...

Some of these methods will compile and run, while others will not.

Indicate, for each method, whether it compiles or not in context of the code on page 1 of <u>Handout A</u> and page 1 of <u>Handout B</u> and assuming the methods appear inside this class:

```
public class TraderBobs {
  // methods appear here
}
```

a. (3 pts)

```
public static void TB44 () {
   Product p44 = new Beverage(199, "Milk", 120, 6.75);
   System.out.println(p44.getName());
}
Will it compile?

\[
\text{Ves}
\]
No
```

b. (3 pts)

```
public static void TB45 () {
  Food f45 = new Food(99, "Peanuts", 100, 0.63);
  System.out.println(f45.getPrice());
}
Will it compile?

Ves

No
```

c. (3 pts)

d. (3 pts)

```
public static void TB47 () {
   Product p47 = new Product(299, "Fuzzy Dice");
   System.out.println(p47.getPrice());
}
Will it compile?

\[ \sum_{Yes}
\]
No
```

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8. Continued from previous problem...

Some of these methods will compile and run, while others will not.

Indicate, for each method, whether it compiles or not, in context of the code on page 1 of  $\underline{\text{Handout } B}$  and assuming the methods appear inside this class:

```
public class TraderBobs {
  // methods appear here
}
```

a. (3 pts)

```
public static void TB48 () {
   Product p48 = new Food(249, "Kind Bar", 200, 1.4);
   System.out.println(p48.getName());
}
```

Will it compile?

Yes
No

**DON'T** 

WRITE ANYTHING

HERE!!!

b. (3 pts)

```
public static void TB49 () {
    Edible e49 = new Product(299, "Fuzzy Dice");
    System.out.println(e49.getCalories());
}
Will it compile?

\[ \sum_{Yes}
  \]
\[ \sum_{No}
\]

c. (3 pts)
```

public static void TB50 () {
 Edible e50 = ()->99;
 System.out.println(e50.getCalories());
}
Will it compile?

\[ \sum\_{Yes}
\]
\[ \sum\_{No}
\]

d. (3 pts)

e. (3 pts)

```
public static void TB52 () {
   Product p52 = new FreeCandy(42);
   System.out.println(p52.getName());
}
Will it compile?

\[ \sum_{Yes}
\]
\[ \sum_{No}
\]
```

## **End of Exam**