EE-552 2017S Java Test #3 A Name: Yan Chen

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1. (50 points) Write a class AddressBook containing first name, last name, email (strings), and phone number (long). Then write a main that creates a single AddressBook object for yourself and writes it to the file "addrbook.ser". Also implement the Cloneable interface and demonstrate copying an Addressbook. Implement a method equals that returns true if two Addressbook objects are the same.

```
Public Class AddressBook implements Serializable, Cloneable {
    public String fName;
    pnblic String lName;
    Public String email;
    public long pNumber;
    public AddressBook (String fName, String lName, String email, long pNumber
        this.fName = fName; this.lName = lName;
        this.email = email; this.pNumber = pNumber;
    }
ic AddressBook clone(){
return super.clone();
    public static void main(String args[]) {
        AddressBook me = new AddressBook("...");
        ObjectOutputStream oos = new ObjectOutputStream(new FileOutputStream
                ("addrbook.ser"));
        oos.writeObject(me);
        oos.close();
        AddressBook me2 = me.clone();
        me.equals(me2);  define your own method
    }
}
public Boolean equals(AddressBook right){
    if (this.fName = right.fName){
        if (this.lName = right.lName){
            if (this.email = right.email){
                if (this.pNumber = right.pNumber){
                    boolean e = True;
}}}}
```


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2. (10 points) Write code to insert 10 elements into an ArrayList<Integer>. Then show how you can use an iterator to walk through the list and sum the elements.

```
Public Class AL {
    public ArrayList<Integer> a;   public AL(){}
    public static void main(String args[]){
        ArrayList<Integer> a = new ArrayList<Integer>();
        for(int i=0; i<10; i++){
            a.add(i);
        }
        int sum=0;
        for(ListIterator<Integer> it = a.iterator(); it.has
            sum = it.next()+sum;
        }
    }
```

3. (10 points) Write code to create a HashMap with keys that are strings and values that are double. Put in "AAPL" → 140.5, "IBM" → 128.13 and "MSFT" → 67.89
Find the value corresponding to MSFT and add 1 to it.

```
Public Class HM {
    public HashMap<String, double> map;
    public HM(){}
    public static void main(String args[]){
        HashMap<String,double> HM= new HashMap<String,double>();
        HM.put("AAPL", 140.5);
        HM.put("IBM", 128.13);
        HM.put("MSFT", 67.89);
        double value = HM.getValue("MSFT");
        double addValue = HM.getValue("MSFT")+1;
    }
```

4. (30 points) Create a Java Bean Vec3d with three attributes: x,y,z, all double. Support methods allowing addition of vectors and printing them out. Describe which methods make the class a bean as opposed to just a Java object.

30

```
public Class Vec3d {
    private double x,y,z;
    public Vec3d (double x, double y, double z) {
        this.x = x; this.y = y; this.z = z;
    }
    public double getX() {
        return x;
    }
    public void setX(double x) {
        this.x = x;
    }
    public double getY() {
        return y;
    }
    public void setY(double Y) {
        this.y = y;
    }
    public double getZ(){
        return z;
    }
    public void setz(double z) }
        this.z = z;
    }
    public addition(Vec3d right) {
        return (new Vec3d (this.x+ right.x, this.y+right.y, this.z +right.z
        print(
    }
    public static String toString() {
        return "(" + x + "," + y + "," + z + ")";
    }
}
```

the
a bean

5. (1 point extra credit) Show the output

```
public class CopySemantics {
  public static void main(String[] args) {
    int a = 3, b = a, c = 3;
    System.out.println(a==b);
    System.out.println(a==c);
    Integer i1 = new Integer(a);
    Integer i2 = new Integer(b);
    System.out.println(i1 == i2);
    System.out.println(i1.equals(i2));
  }
}
```

True
True
False
True

D

6. (3 point extra credit) Write code to search a string a print out every occurrence of "dog" or "cat" or any word starting with A or a and ending with a using regular expressions. For example:

String s = "I have a dog, a cat and I live in Australia.";

should print: dog ... cat ... Australia.