ArrayList: an Auto-Expanding Array

Must import java.util.ArrayList;

1. Declare and create an ArrayList named alist that stores instance of type Item.

2. Add an Item.

3. Add some Items to your ArrayList

4. How can we find out how many items are in the list? Get the number of items in the ArrayList.

5. Get the first item in the list.

6. Get the last item in the list.

7. Does get(int) remove the item from the list?

8. Declare and create an ArrayList of integers.
Arrays of Objects

When an array of a reference type is created; element values are null until the individual objects are created and assigned as elements of the array. Use brackets [ ] to indicate which element.

1. What is output by this code fragment if Widget is defined as shown? Hint: Draw the Object (memory) diagram of the state of memory allocation at the end of execution of the previous question’s code fragment.

```java
public class Widget {
    public static final String COMPANY = "ACME";
    private static int count = 0;
    private String name;
    public Widget( String name ) {
        ID = 9000 + ++count;
        this.name = name;
    }
    public Widget() {
        this( "W" + count );
    }
    public static String getCompany() {
        return COMPANY;
    }
    public static int getCount() {
        return count;
    }
    public long getID() {
        return ID;
    }
    public String getName() {
        return name;
    }
    public void setName( String newName ) {
        name = newName;
    }
}
```

```java
// Code Fragment
Widget [] w;

w = new Widget[5];
w[0] = new Widget();
w[1] = w[0];
w[2] = new Widget("Blackberry");
w[3] = new Widget("iPhone");
String s = "" + w[0];
w[4] = w[0];
w[4].setName("Samsung");
s += w[0].getID() + " + w[1].getID() + " ;
s += w[2].getID() + " + w[3].getID() + " ;
s += w[4].getID();
s += " = " + Widget.getCount();
System.out.println( s );
w[0] = new Widget();
System.out.println( Widget.getCount() );
System.out.println( w[0] == w[1] );
System.out.println( w[1] == w[4] );
System.out.println( w[3].equals( new Widget("iPhone") ) );
System.out.println( w[3].getName().equals( (new Widget("iPhone")).getName() ) );
System.out.println( w[3].getName().equals( "iPhone" ) );
```