0.1
Unlike an array, an ArrayList needs to be able to support appending elements. Usually, an ArrayList is implemented by maintaining an array that is larger than required, and another variable to keep track of how many elements have been stored in the array. Fill in the missing code for the add method, doing what is appropriate for a generic class. Fill in the missing code. The number of lines corresponds to the answer key. Your code may vary.

```java
public class Alist<T> {
    Object[] data = new Object[10];
    int size = 0;
    public void add(T item) {
        if (size + 1 >= data.length) {
            Object[] newData = new Object[data.length + 10];
            for (int i = 0; i < data.length; i++)
                newData[i] = data[i];
            data = newData;
        }
        data[size++] = item;
    }
}
```

0.2
Does the following code compile? If it does not, how can it be fixed? If it does, what is its output? Does it throw an exception? If so, how can it be fixed?

```java
public class ArraysInJava {
    public static void main(String[] args) {
        int[] i = new int[0];
        System.out.println(i[0]);
    }
}
```

The code compiles, but when it runs it throws a `ArrayIndexOutOfBoundsException`.

replace the code: `int[] i = new int[0];`
with the code: `int[] i = new int[1];`

0.3
What is the advantage of using an array class? It allows for resizable arrays.