ArrayLists

- It is an array, but it has more useful methods than just a normal array
- ArrayList are more advanced arrays. It can collect objects.
- 2 significant advantages:

1. It can grow or shrink as needed.
2. ArrayList class supplies methods for many common tasks, such as inserting and removing elements.

```java
import java.util.ArrayList;

public class Student{
    private String name;

    public Student(String name){
        this.name = name;
    }
}

public class School{
    // ArrayList of students
    private ArrayList<Student> roster;

    public School(){
        // need the () for initializing an ArrayList
        roster = new ArrayList<Student>();
    }

    public void addStudent(){
        // we can only add in student types because ArrayList is of the type Student
        roster.add(new Student("Henry"));

        // or:
        Student kyle = new Student("Kyle");
        roster.add(kyle);

        // roster: Henry, Kyle
        // note: roster.size(); gets the size of the roster
        // Henry is in index 0, Kyle is in index 1

        // this adds Vincent to index 1 and pushes everyone over.
        roster.add(1, new Student("Vincent"));
    }

    public Student getStudent(){
```

```
        // Retrieve a Student from ArrayList
        Student dummy = roster.get(0); // dummy is Henry

        Student biggerDummy = roster.get(roster.size()); // out of bounds
        return dummy;
    }

    public void removeStudent(int index){
        roster.remove(index);
    }
}
```

Common Mistakes

People tend to mix up the methods for getting size of different objects. Here are ones we've learned:

Type	Size of Type
Array a	a.length
ArrayList a	a.size()
String a	a.length()