

Midterm 1

Introduction
to
Programming

Laura Hobbes
LeGault

Review

ArrayLists

Grades posted on Learn@UW, exams passed back on Wednesday. Regrades to be resolved by **22 March**.

All of 302: 40 students (out of 540) got 72/72.

Median: 57/72; Mean: 54/72

Our section: 3 students (out of 22) got 72/72.

Median: 57/72; Mean: 54.55/72

Arrays

Introduction
to
Programming

Laura Hobbes
LeGault

Review

ArrayLists

Arrays can hold variables of only one type, and have a fixed length. To insert values at a specific point without overwriting current contents, we have to shift the contents manually.

```
int[] arr = new int[5];  
int numFilled = 0; // companion variable  
  
arr[0] = exam1_numCorrect();  
numFilled++; // must remember to do this!
```

2D Arrays

Also: multi-dimensional arrays, which can be jagged:

```
public static final int[] [] NOTCHES = {  
    // Identity rotor:  
    { 0 }, // A  
  
    { 17 }, // R  
    { 5 }, // F  
    { 22 }, // W  
    { 10 }, // K  
    { 0 }, // A  
  
    { 0, 13 }, // A and N  
    { 0, 13 }, // A and N  
    { 0, 13 }, // A and N  
};
```

Introducing ArrayLists

Introduction
to
Programming

Laura Hobbes
LeGault

Review

ArrayLists

A new reference-type variable to make working with arrays a little easier (sometimes): `ArrayLists`.

- + Not fixed size!
- + Include some methods for array tasks
 - Slow :(

Let's take a look at the `ArrayList` javadoc.

Using ArrayLists

Introduction
to
Programming

Laura Hobbes
LeGault

Review

ArrayLists

Here's the syntax for making an ArrayList:

```
ArrayList<String> profs = new ArrayList<String>();
```

You have to give an ArrayList a type (just like for an array, where you'd say `String[]`), but you *don't* have to give it a length!

ArrayLists are still reference variables!

Introduction
to
Programming

Laura Hobbes
LeGault

Review

ArrayLists

Just as we couldn't copy an array using

```
int[] x = {1,2,3,4,5};  
int[] y = x;
```

we can't do that with ArrayLists either. But we do have a shortcut:

```
ArrayList<String> x = new ArrayList<String>(y);
```

Let's play around with ArrayLists

Introduction
to
Programming

Laura Hobbes
LeGault

Review

ArrayLists

Let's see what some of these ArrayList methods can do:

- 1 Store input values in an ArrayList
- 2 Find the largest value in an ArrayList
- 3 Remove the smallest value from an ArrayList