

# CS240: Data Structures And Algorithms

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Fall, 2014

# Farewell To Java...

```
import java.util.ArrayList;
import java.util.LinkedList;

public class ListDemo {
    public static void main(String[] args) {

        System.out.println("Starting!");

        LinkedList<String> list = new LinkedList<String>();

        for (int i = 0; i < 200000; i++)
        {
            list.add(0, "A");
        }

        for (int i = 0; i < 200000; i++)
        {
            list.remove(0);
        }

        System.out.println("Done.");
    }
}
```

# List, ArrayList, LinkedList

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- List
- ArrayList
- LinkedList

# Abstract Data Types and Data Structures

- “An **abstract data type** (ADT) is a mathematical model of a data structure that specifies the type of data stored, the operations supported on them, and the types of parameters of the operations. An ADT specifies *what* each operation does but not *how* it does it.” p.59
- “A **data structure** is a systematic way of organizing and accessing data.” p. 110

# Two Steps Back: CS350

- MIPS Assembly language example:

```
lw $t0, 0($s0)
```

```
add $t0, $t0, $t0
```

```
sw $t0, 0($s0)
```

- Arrays vs. Linked Structures

# For Wednesday

- Do the posted reading.
- Start experimenting with Python – install it on your computer.
- Sign into Canvas and log into Piazza.
- Complete the course survey.
- Complete the reading quiz.