

Introduction to Arrays and ArrayLists in Java

by Chris O'Brien

General Overview

This is a unit for my AP CS A course. We'll be introducing Arrays and ArrayLists in Java. The students have already been introduced to classes, control structures, and other elements of the syntax of Java. The course relies on a combination of lecture, in class work, and homework (frequently using CodeHS assignments).

Motivation for Unit

The goal is to provide students with a hands on introduction to arrays and array lists in Java, along with a comparison to Python lists (which they've seen in previous classes).

Standards Referenced

CSTA 11-12th grade standards: 3B-AP-12: Compare and contrast fundamental data structures and their uses.

In this unit we're discussing the use of arrays and ArrayLists within Java and between Java and Python.

Tools Used

Java (on CodeHS)
AP Classroom
Keynote/Powerpoint
Google Classroom

Resources

- [CodeHS arrays unit](#)
- [CodeHS ArrayLists unit](#)
- Activities from Summer Hunter Course
- [AP CS A Curriculum guide](#)

Lessons

Total length: 2 Weeks

1. Represent collections of related primitive or object reference data using one-dimensional (1D) array objects
2. Traverse the elements in a 1-D array
3. Traverse the elements in a 1D array object using an enhanced for loop

4. Build a Mancala AI with Arrays and enhanced for loops
5. Identify some common algorithms that use Arrays
6. Compare and contrast Java Arrays w/ Python lists
7. Build your own SuperArray class that makes arrays behave like a Python list (Project)
8. Represent collections of objects using ArrayLists
9. Traversing ArrayList and using ArrayList with an enhanced for loops
10. Assessment: MC quiz and Performance Task: Re-implement Mancala with ArrayLists

Assesments

In class projects: Build Mancala AI with arraylists, build superArray classic

Assessment: MC quiz and performance task: Re-implement Mancala with ArrayLists
