# Representing Lists in Java

Java provides a few ways to represent lists, including the 'array' which his part of the Java language proper, and a number of classes in the Java library. Perhaps the easiest way to represent lists is with a library class called **ArrayList**. Take a look at the following Java and Python samples:

Java: http://www.cs.usfca.edu/~wolber/courses/110.f07/javaSamples/ListTest.java
Python: http://www.cs.usfca.edu/~wolber/courses/110.f07/javaSamples/ListTest.py

Here's the key differences in terms of how you do things:

| **Java ArrayList** | **Python list** |
|---|---|
| ArrayList<type> list = new ArrayList<type>() | list=[] |
| list.add(object) | list.append(object) |
| list.get(i) | list[i] |
| list.size() | len(list) |
| list2= list.clone() | list2=list[:] |

ArrayList requires the type of the elements in the array to be specified (just like everything in Java). Consider how you declare and set an integer in Java:

```
int x; // declare x as an integer
x= 4; // set x to 4
```

ArrayList is similar but you declare that the variable is a list of a specific type using <>

```
ArrayList<String> list = new ArrayList<String>
list.add("abc");
```

ArrayList can only hold object types, not scalers like 'int'.

ArrayList is not 'built-in' to the language, but part of the core java library (must import java.util.*)

## *Instructor Coding Sample*

Write a class Person and a main program that creates three person's, puts them in a list, and totals up the age of each person in the list.

## *In Class Programming Assignment:*

To practice using ArrayList and get started with the ParkingLot program, write the following code in the files Car.java and ParkingLot.java:

* A class Car with three public data members: initialSpot, currentSpot and finalSpot, all of type integer.

* A class ParkingLot with a main method that creates three cars, puts them in a list named 'waitingList', and prints out the list.

*Next steps:*

Add a constructor to Car
Define 'waitingList' as a data member of class ParkingLot instead of a local.
Read in the initial spot for each car using Scanner class