# Lab 2 Looking at Java’s ArrayList and LinkedList classes

# Week beginning 21/09/2015

### The following table is from TIJ3 in Choosing between Lists in Chapter 11. It gives the time in milliseconds for multiple runs of various methods.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Type** | **Get** | **Iteration** | **Insert** | **Remove** |
| array | 172 | 516 | na | na |
| **ArrayList** | 281 | 1375 | 328 | 30484 |
| **LinkedList** | 5828 | 1047 | 109 | 16 |
| **Vector** | 422 | 1890 | 360 | 30781 |

# It is comparing get, iteration, insert, remove for ArrayList, LinkedList and Vector.

Try to do this yourself for just ArrayList and LinkedList.

There are datasets available to download from <http://www.cs.princeton.edu/introcs/data/>

To test get, use code like:

for(int i = 0; i < reps; i++) {

// reps is the number of repetitions

// declare reps as something large e.g. 10000

for(int j = 0; j < quantity; j++) // declare quantity // as reps/10

list.get(j); // list is your list

// (ArrayList or LinkedList)

}

To test iteration, use code like:

for(int i = 0; i < reps; i++) {

Iterator it = list.iterator();

while(it.hasNext())

it.next();

}

To test insert, use code like:

int half = list.size()/2;

String s = "test";

ListIterator it = list.listIterator(half);

for(int i = 0; i < reps \* 10; i++)

it.add(s);

To test remove, use code like:

ListIterator it = list.listIterator(3);

while(it.hasNext()) {

it.next();

it.remove();

}

Time the tests on the two types of list. Sample code for reading from a file is given in filehandlingcode.txt. Look at System class for a method that give you the current time.

Check if your results are comparable to Eckels.

You can also use an array in your tests by using the Arrays.asList() method.

String[] sa = new String[quantity];

//then populate the array sa

List list = Arrays.asList(sa);