Lab05 - Search and Sort

Due: Fri Feb 6, 2015

Searching and sorting… searching and sorting...
- ❏ Chapter 16 Sort and Search

Monday - Search

Focus topic: `Comparable` interface, binary search, the Arrays class
Let's modify the the book's `RecursiveBinarySearcher` class (page 986) to work for objects, not ints. The `Comparable` interface is the key!

Steps:
- ❏ Modify `RecursiveBinarySearcher` to work with an array of `Comparable` objects.

- ❏ Copy the `Lab05` class from my `common_area`. It creates a sorted array of baby names for you to use. We'll search for baby boy names. Source: www.babycenter.com/top-baby-names-2013.

Here's a sample run:
```
** Welcome to Lab 05 **
      Chap 16 - Fun with search and sort

Boys names are:
[Aiden, Alexander, Benjamin, Caden, Caleb, Connor, Daniel, Elijah, ...

Enter a name [or enter to exit]: Mason
Mason was found at element 18

Enter a name [or enter to exit]: Tyler
Tyler was not found.

Enter a name [or enter to exit]:
```

These are some useful details to remember:
- String objects are already `Comparable`. You'll notice that it's case-sensitive.
- Page 490 shows how to declare and initialize an array of strings.
- `Arrays.sort( Comparable[] array)` can sort an array of objects.
- `Arrays.toString( Object[] array)` can print the objects in array.

Wed - Sort

Today, we're sorting squids for the new squid zoo, Squid World.
Grab my code in the common_area: Squid.java, Lab05b.java.

1. Comparable Squids

Here are your steps:

- In class `Lab05`, modify the `main()` and `testSquid1()` methods to print the squid array and then sort it and then print it again
- This should crash… because our Squids aren't `Comparable`… yet.
- So, make `Squid Comparable`. Compare squids based on their Zoo ID
- Run it!

Here's what my output looks like. How did I get Squid to print so nicely?

```
Hello, Squid World

Squid zoo, unsorted:
[Squid Prof Bill (id=161), Squid Suby (id=700), Squid Ricky M (id=512), Squid
Samantha G (id=399), Squid Zach M (id=123)]

Squid zoo, sorted by zoo ID:
[Squid Zach M (id=123), Squid Prof Bill (id=161), Squid Samantha G (id=399),
Squid Ricky M (id=512), Squid Suby (id=700)]

Done
```

2. Squid Comparator

Here are your steps:

- Create a `Comparator` for Squid. Call it `SquidComparator`. Make this guy compare squids by **tentacle strength**.
- In Lab05, modify `main()` and `testSquid2()`.
- Run it!

```
Hello, Squid World

Squid zoo, unsorted:
[Squid Prof Bill (id=161), Squid Suby (id=700), Squid Ricky M (id=512), Squid
Samantha G (id=399), Squid Zach M (id=123)]

Squid zoo, sorted by tentacle strength:
[Squid Ricky M (id=512), Squid Zach M (id=123), Squid Samantha G (id=399),
Squid Suby (id=700), Squid Prof Bill (id=161)]

Done
```