`Names` example

- Example: **`Names`** class
- practice with
  - coding array algorithms
  - implementing classes
  - and using good development techniques
- incremental development
- for **`lookup`**, **`remove`**, **`insert`**:
  - design test cases first
  - implement code
    - code refactoring
  - test code

Announcements

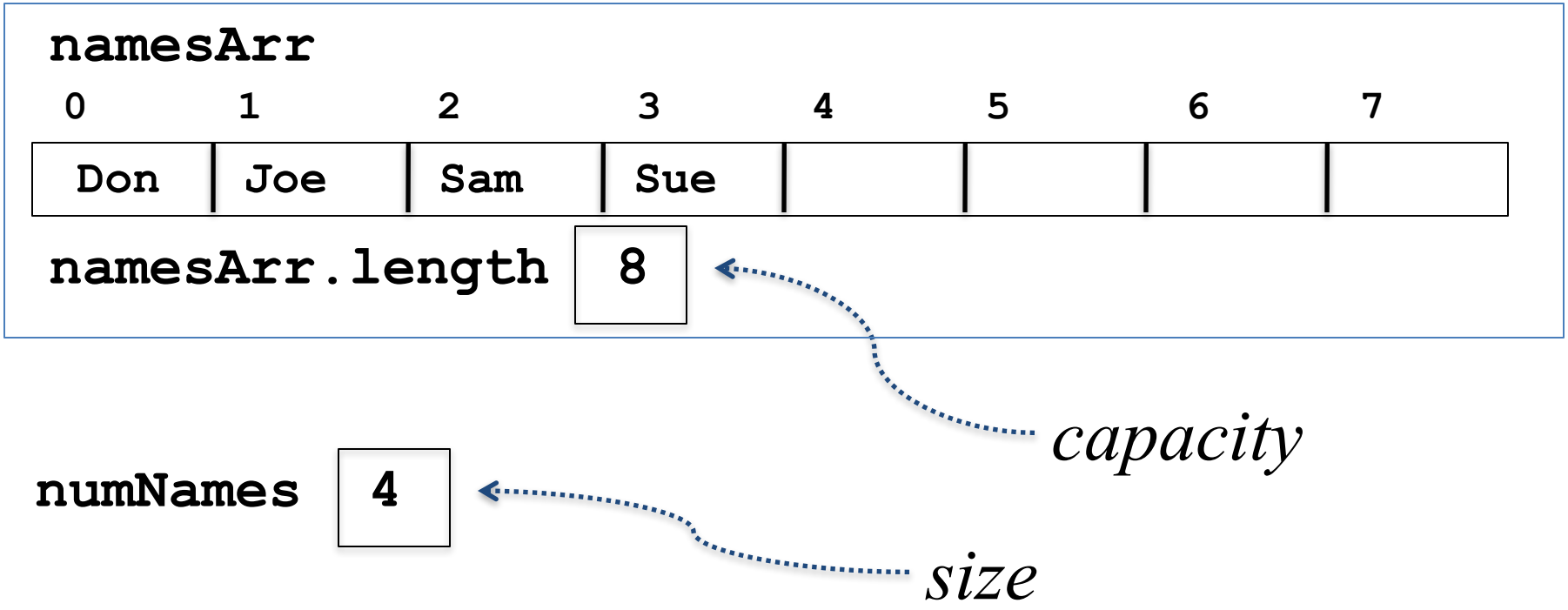
- Sample midterm exams have been published (link to Sample Exams page on left side of web page).
- PA2 available

`Names` class

- Stores a list of unique names in alphabetical order.
- Allows look-up, insert, and removal of elements in the list.
- Uses partially-filled array representation

- **`Names.java`** has a partial implementation
- **`MinNamesTester.java`** is a program to test that subset.

Names representation



Lookup test cases

- Returns true iff **`target`** is present in names

`namesArr`

0	**Anne**
1	**Bob**
2	**Carol**
3	**Don**
4	**Ed**

Test cases

`numNames` **5**

Lookup code notes

- Returns true iff **`target`** is present in names

`namesArr`

0	**Anne**
1	**Bob**
2	**Carol**
3	**Don**
4	**Ed**

`numNames` **5**

Remove test cases

Removes **`target`** from names object, and returns **`true`**.

If **`target`** wasn't present in names, returns **`false`** and no change made to names.

Test cases

`namesArr`

0	**Anne**
1	**Bob**
2	**Carol**
3	**Don**
4	**Ed**

`numNames` **5**

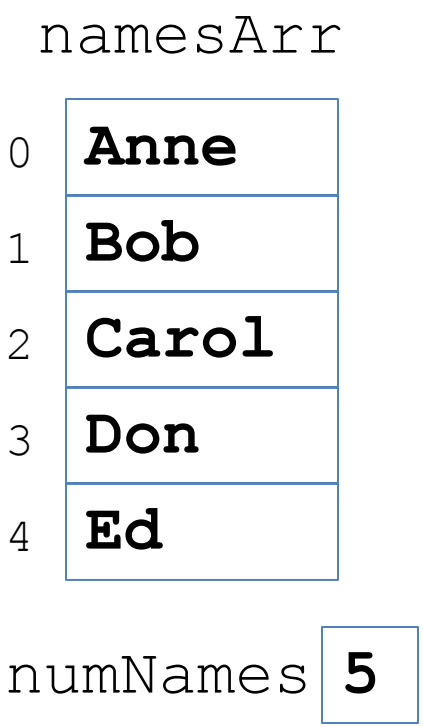
Reuse code to test remove

```
public static void testRemove() {
   Names names = new Names();
   names.loadNames();
   System.out.println("Attempt remove: Scotty");
   boolean removed = names.remove("Scotty");
   if (!removed) {
      System.out.println("Scotty was not present");
   }
   System.out.println(
     "Names in list [exp: Anne Bob Carol Don Ed]: ");
   names.printNames();
   System.out.println(
               "Number of names in list [exp: 5]: "
               + names.numNames());
}
```

Implementing remove: outline

Removes **`target`** from names object, and returns **`true`**.
If **`target`** wasn't present in names, returns **`false`** and no change made to names.

```
public boolean remove(String target) {
```



Minimize amount of code

- Reuse lookup loop?
- It returns boolean
- Refactor!

New helper function

```
/**
    lookupLoc returns index of target in namesArr
    or NOT_FOUND if it is not present
*/
private int lookupLoc(String target)
```

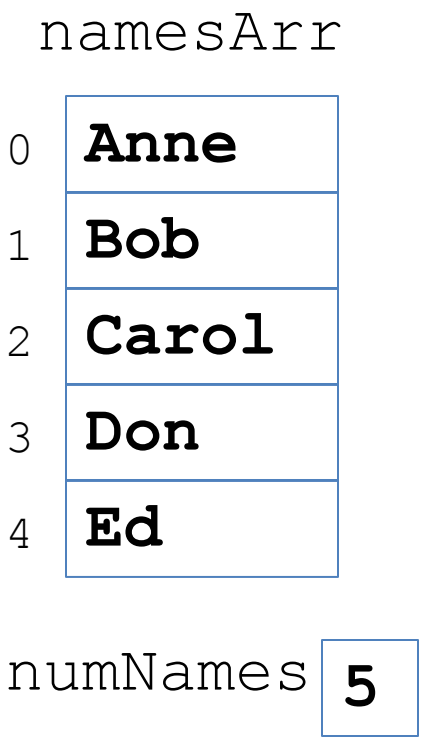
Refactored `lookup` that uses `lookupLoc`

```
public boolean lookup(String target)
```

Implementing remove

Removes **`target`** from names object, and returns **`true`**.
If **`target`** wasn't present in names, returns **`false`** and no change made to names.

```
public boolean remove(String target) {
```



Insert test cases

Inserts `newName` into alphabetical names list.

Returns `false` and no change is made to names if `newName` is already present.

Test cases

`namesArr`

0	**Anne**
1	**Bob**
2	**Carol**
3	**Don**
4	**Ed**

`numNames` **5**

Insert code notes

Inserts `newName` into alphabetical names list.

Returns `false` and no change is made to names if `newName` is already present.

`namesArr`

0	**Anne**
1	**Bob**
2	**Carol**
3	**Don**
4	**Ed**