CompSci 94
Arrays, Loops with Arrays
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Arrays

• What is an array?

• Why create an array?

• Can an object be in more than one array?
Arrays

• What is an array?
  – A group of similar objects
  – Examples: All flyers, all decimalNumbers, all SJointedModel

• Why create an array?
  – Can have just one instruction for every item in the array
  – Less code

• Can an object be in more than one array?
  – Yes!
How and Where does one create an array?
How and Where does one create an array?

• Create as a Scene Property

![Scene class diagram]

• Go to bottom of page and add there.

![Add Scene Property button]
Example – Build array of Flyers

• Be sure to check box by “is array”
• Must add Objects into the array
Result
What is the order the birds do something here?

```java
new Flyer[] { phoenix, chicken, flamingo, penguin, ostrich }
```

```java
for each Flyer oneBird in this.lotsOfBirds
    oneBird spreadWings
    oneBird foldWings
loop

// Move penguin between phoenix and chicken
this.penguin move RIGHT, 2.3
```

```java
for each Flyer oneBird in this.lotsOfBirds
    oneBird spreadWings
    oneBird foldWings
loop
```
What is the order the birds do something here?

- Move their wings in this order: Phoenix, chicken, flamingo, penguin, ostrich, then SAME order again.
What does this code do?

- The birds turn red one at a time. Then at the same time they all turn blue.
What does this code do?

• The birds in array lotsOfBirds turn red one at a time. Then at the same time they all turn blue.
What does this code do?

• Phoenix says greetings one at a time
• Then Penguin says the greetings all at once
What does this code do?

• Phoenix says greetings one at a time
• Then Penguin says the greetings all at once
What does this code do?

• Each bird in the array `lotsOfBirds`, one at a time, says the phrases in the array `greetings`, one at a time.
What does this code do?

- Each bird in the array `lotsOfBirds`, one at a time, says the phrases in the array `greetings`, one at a time.
What does this error mean?

```
for each Flyer someBird in this.lotsOfBirds
```

- **item type**: Flyer
- **item name**: someBird
- **array**: this.lotsOfBirds

Error message:

```
"someBird" is not available.
```
What does this error mean?

- This name already exists. You must use a different name for each loop!
BE CAREFUL!

• When naming loop variable

• Don’t CUT and PASTE ARRAY LOOP code
BE CAREFUL!

• When naming loop variable
  – Don’t use the name of anything else in your program.
    • Don’t use penguin, etc.
    • Use someBird, someBird2, someBird3

• Don’t CUT and PASTE ARRAY LOOP code
  – This can lead to using a variable from the wrong loop. Your Alice code will freeze!
Announcements

• QZ13 and Videos for next time
Class Today

- Iterating through Arrays