Before class

• Snarf the code for today’s class
Announcements

• APT Set 1 - Due Jan 17
• Hangman assigned - Due Jan 24
• UTAs - we are still waiting
Announcements

• Exam 1
  • Currently February 13
    • Same day as Duke vs. UNC
  • Change to Friday, February 15?
By the end of class you should be able to answer:

- What is a class?
- What is an object?
- What are 4 built-in Java Object types?
• A blueprint
  • Example: Dog
    • State
      • Height
      • Weight
      • Name
      • Bread
    • Behavior
      • catchchBall
      • wagMore
Object

• A particular instance of a class
  • State
    • Height - 3’
    • Weight - 70 lbs
    • Name - Fido
    • Bread - Boxer
  • Behavior
    • catchchBall
    • wagMore
Example

• Snarf the code for today’s class

• Open Circle.java
public class Circle {

    int myXLocation;
    int myYLocation;
    Color myColor;
    int myDiameter;

    Circle(int x, int y, Color c, int d) {
        myXLocation = x;
        myYLocation = y;
        myColor = c;
        myDiameter = d;
    }
}
public Color getColor()
{
    return myColor;
}

public int getXLocation()
{
    return myXLocation;
}

public int getYLocation()
{
    return myYLocation;
}
Practice

• Look at DrawCircles.java
  • `draw(int numCircles)` creates 3 circle objects
  • Change `draw` to create 50 circle objects
    • Can you make the circles at different locations?
      • The x,y coordinates are [0, 500]
Objects

- Primitives
  - int, char, boolean, double

- Objects
  - String
  - ArrayList - Expandable array
  - HashSet - List that prevents duplicates -
  - HashMap - A “dictionary” where you associate a key to a value

*Note: Object types start with capital letters*
HashMap

- HashMap - A “dictionary” where you associate a key to a value
  - Word - definition
  - Letter - # of instances of that letter
HashMap

- “Able was I ere I saw Elba”

<table>
<thead>
<tr>
<th>Key</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘a’</td>
<td>4</td>
</tr>
<tr>
<td>‘b’</td>
<td>2</td>
</tr>
<tr>
<td>‘l’</td>
<td>2</td>
</tr>
<tr>
<td>‘e’</td>
<td>4</td>
</tr>
</tbody>
</table>
HashMap Example

• Create a HashMap that maps a Color to the number of circles with that color.

```java
HashMap<Color, Integer> aMap = new HashMap<Color, Integer>();
for(Circle c: circleArray){
    Color circleColor = c.getColor();
    // your code goes here
}
```
Today

• Can you answer:
  • What is a class?
  • What is an object?
  • What are 4 built-in Java Object types?