Methods, Data and Data Types

Chapter 1-3
Wombat and leafs

• Open up greenfoot WombatWorld scenario
  – Lets reverse engineer Wombat class
  – Lets look at methods and data of this class? How and where?
Java language syntax

• Comments: You can add comments to your program to explain the code

// single line comment

/* multiple line
   line
   comment */

• Constructor is a special method that has the same name as the class; it has no return value
Data Types

• Whole numbers: represented by : `int`
  Example:
  ```java
  int numStudents;
  ```

• Real numbers, numbers with fractional components, floating point numbers: `float`, `double`
  Example:
  ```java
  float bodyTemp;
  double sizeOfAtom; double distanceToMars;
  ```

• Logic variable that holds true or false values: `boolean`
  Example:
  ```java
  boolean raining; // true or false
  ```
Wombat Class

Wombat

//data
private int leavesEaten;
private int direction;
int x;
int y;
int rotation;
World world;
private GreenfootImage image;

//methods
Wombat()  // constructor
void act()
boolean canMove()
void eatleaf()
boolean foundLeaves()
int getleavesEaten()
void move()
void setDirection(int direction)
void turnLeft()
# Leaf Class

<table>
<thead>
<tr>
<th>Leaf</th>
</tr>
</thead>
<tbody>
<tr>
<td>//data</td>
</tr>
<tr>
<td>int x;</td>
</tr>
<tr>
<td>int y;</td>
</tr>
<tr>
<td>int rotation;</td>
</tr>
<tr>
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<tr>
<td>//methods</td>
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<td>Leaf() //constructor</td>
</tr>
</tbody>
</table>
Interacting with the Objects

• We use the methods:
• The Class (super class) Actor provides the methods:
  
  void move()
  void turnLeft()
  boolean canMove()
  int getLeavesEaten()
  Void setDirection(int direction)
Editing the source code

• Right click on Class, click on Edit code
• Add code to the methods
  – We will add to the constructor Rocket()
    gunReloadTime = 5;
The Crab Scenario

• Lets work on the Crab Scenario to learn more about object-oriented design
10 concepts

1. Method
2. Method definition (in the code)
3. Method call
4. Parameters
5. Sequence of instructions
6. Assignment statement (assigning a value to a data)
7. ; terminator
8. Inheritance (OOP concept: Ex: Actor::Crab)
9. Void return type
10. If-statement (selection statement; expressing choices in execution)