CSE 113 B

September 7 – 11, 2009

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Announcements

- Lab 1 posted on course website – due 10/2
- If you are having trouble logging into the computers in the lab or the Web-CAT website that we will be using for submission, please email me.
- Turn in signed last page of syllabus by 9/14.

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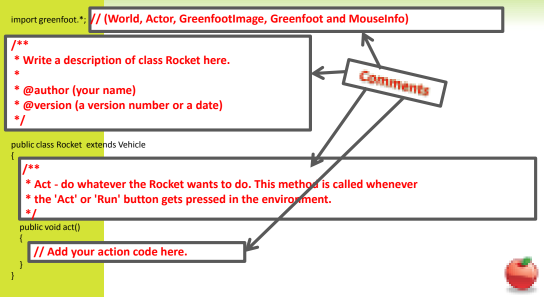
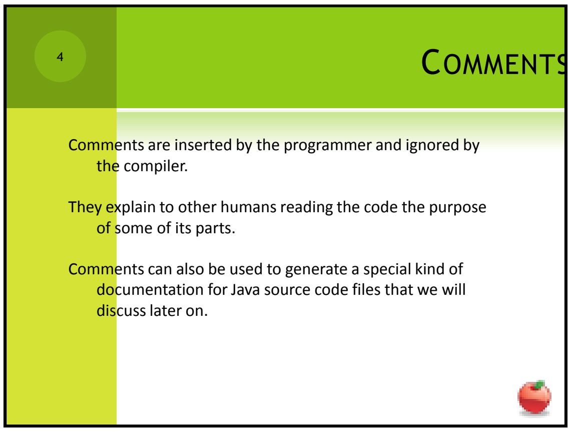
Anatomy of a Java Source Code File



```
import greenfoot.*; // (World, Actor, GreenfootImage, Greenfoot and MouseInfo)
/**
 * Write a description of class Rocket here.
 *
 * @author (your name)
 * @version (a version number or a date)
 */
public class Rocket  extends Vehicle
{
  /**
   * Act - do whatever the Rocket wants to do. This method is called whenever
   * the 'Act' or 'Run' button gets pressed in the environment.
   */
  public void act()
  {
     // Add your action code here.
  }
}
```



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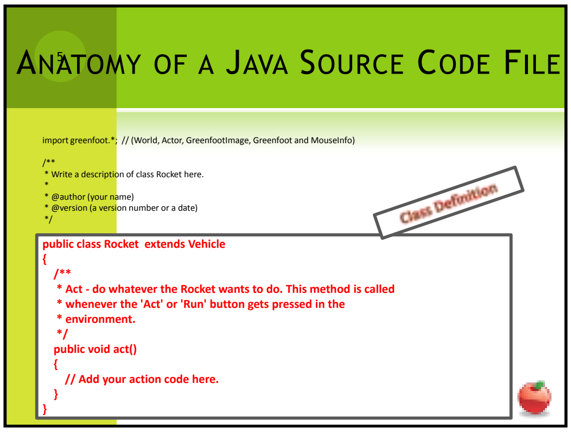
Comments

Comments are inserted by the programmer and ignored by the compiler.

They explain to other humans reading the code the purpose of some of its parts.

Comments can also be used to generate a special kind of documentation for Java source code files that we will discuss later on.



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    */
   public void act()
   {
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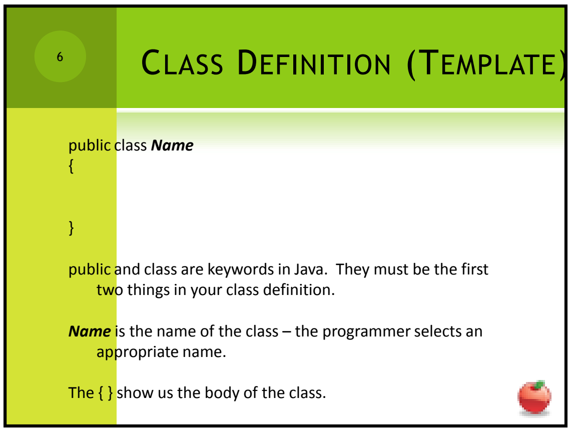
   }
}
```

Class Definition



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Class Definition (Template)

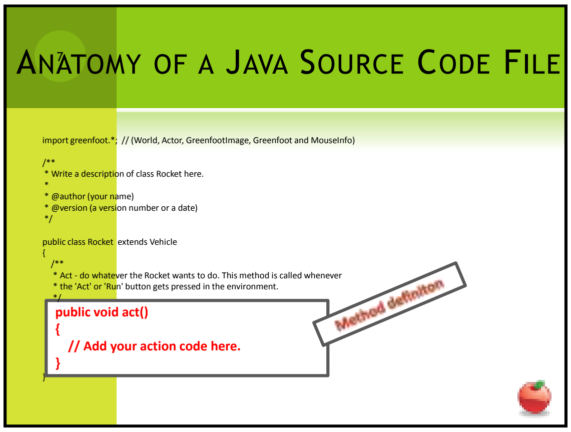
public class ***Name***
{

}

public and class are keywords in Java. They must be the first two things in your class definition.

Name is the name of the class – the programmer selects an appropriate name.

The { } show us the body of the class.



Anatomy of a Java Source Code File

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```
import greenfoot.*;  // (World, Actor, GreenfootImage, Greenfoot and MouseInfo)

/**
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 */

public class Rocket  extends Vehicle
{
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     * Act - do whatever the Rocket wants to do. This method is called whenever
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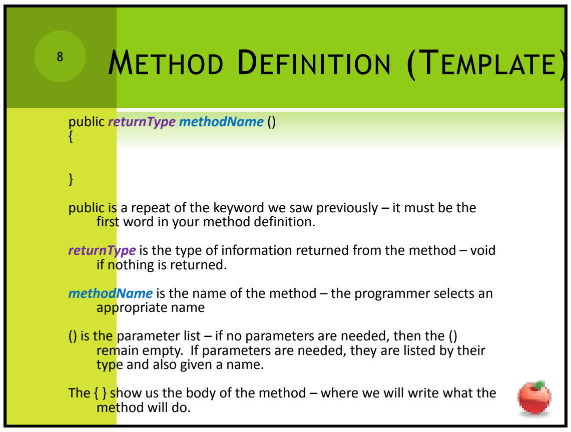
     */
    public void act()
    {
        // Add your action code here.
    }
}
```

Method definiton



Method Definition (Template)

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```
public returnType methodName ()
{

}
```

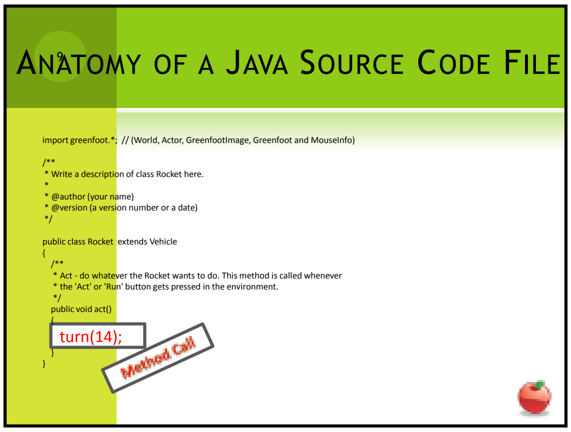
public is a repeat of the keyword we saw previously – it must be the first word in your method definition.

returnType is the type of information returned from the method – void if nothing is returned.

methodName is the name of the method – the programmer selects an appropriate name

() is the parameter list – if no parameters are needed, then the () remain empty. If parameters are needed, they are listed by their type and also given a name.

The { } show us the body of the method – where we will write what the method will do.



Anatomy of a Java Source Code File

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 */

public class Rocket  extends Vehicle
{
    /**
     * Act - do whatever the Rocket wants to do. This method is called whenever
     * the 'Act' or 'Run' button gets pressed in the environment.
     */
    public void act()
    {
        turn(14);
    }
}
```
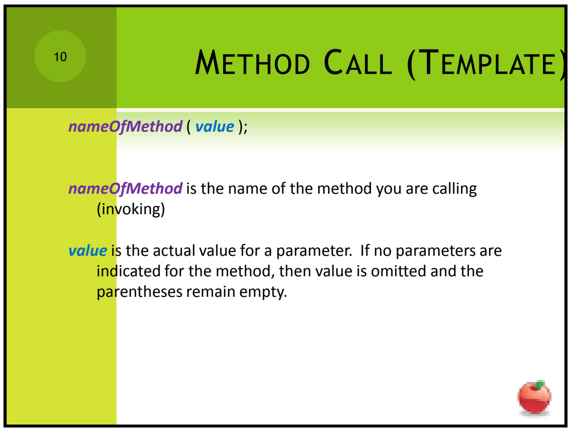

Method Call



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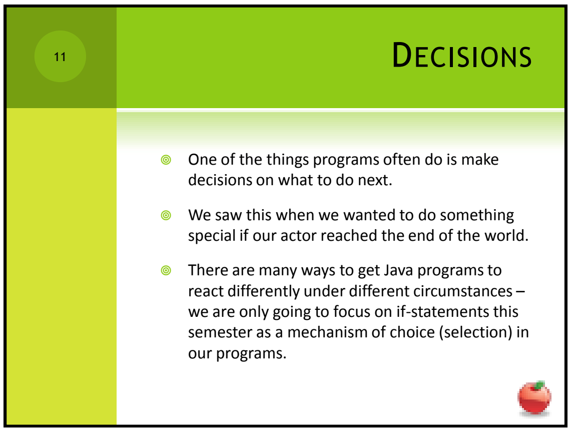
Method Call (Template)

nameOfMethod (*value*);

nameOfMethod is the name of the method you are calling (invoking)

value is the actual value for a parameter. If no parameters are indicated for the method, then value is omitted and the parentheses remain empty.



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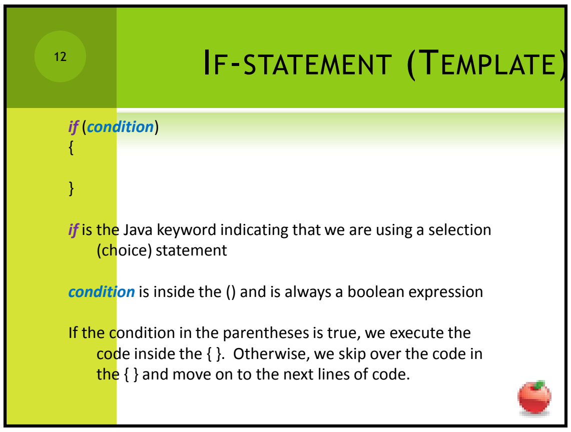
Decisions

- One of the things programs often do is make decisions on what to do next.
- We saw this when we wanted to do something special if our actor reached the end of the world.
- There are many ways to get Java programs to react differently under different circumstances – we are only going to focus on if-statements this semester as a mechanism of choice (selection) in our programs.



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If-statement (Template)

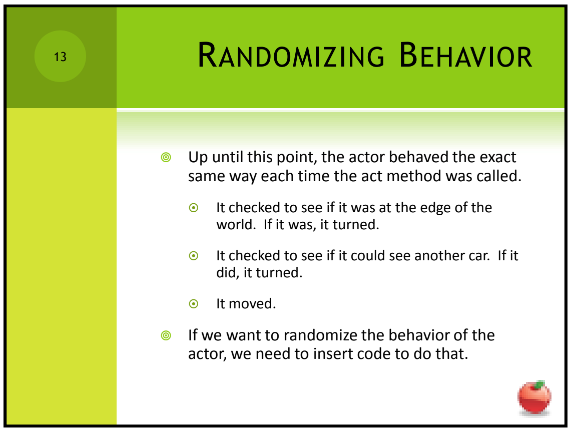
```
if (condition)
{

}
```

if is the Java keyword indicating that we are using a selection (choice) statement

condition is inside the () and is always a boolean expression

If the condition in the parentheses is true, we execute the code inside the { }. Otherwise, we skip over the code in the { } and move on to the next lines of code.



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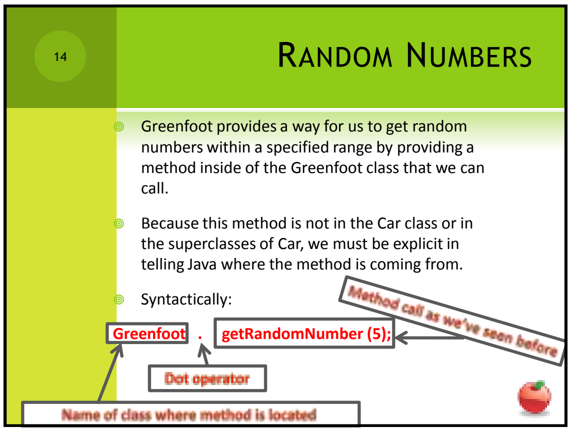
Randomizing Behavior

- Up until this point, the actor behaved the exact same way each time the act method was called.
  - It checked to see if it was at the edge of the world. If it was, it turned.
  - It checked to see if it could see another car. If it did, it turned.
  - It moved.
- If we want to randomize the behavior of the actor, we need to insert code to do that.



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Random Numbers

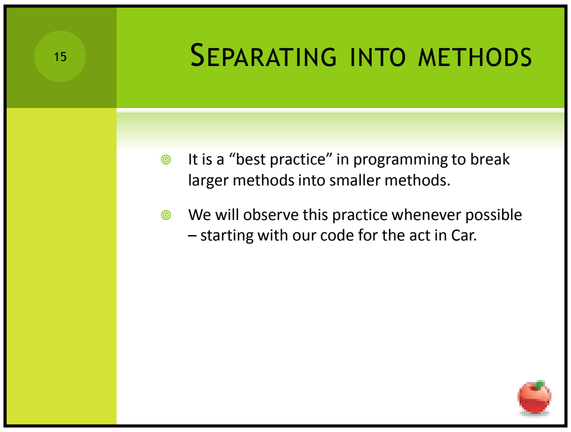
- Greenfoot provides a way for us to get random numbers within a specified range by providing a method inside of the Greenfoot class that we can call.
- Because this method is not in the Car class or in the superclasses of Car, we must be explicit in telling Java where the method is coming from.
- Syntactically:

```
Greenfoot . getRandomNumber (5);
```

Method call as we've seen before

Dot operator

Name of class where method is located



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Separating into methods

- It is a "best practice" in programming to break larger methods into smaller methods.
- We will observe this practice whenever possible – starting with our code for the act in Car.