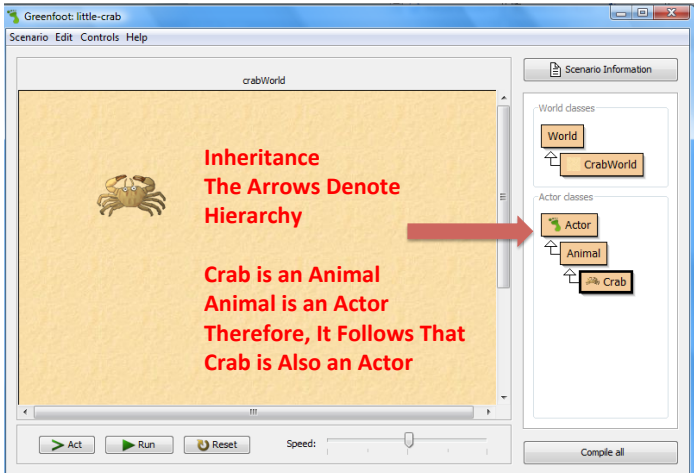
Chapter 2 - The First Program: Little Crab

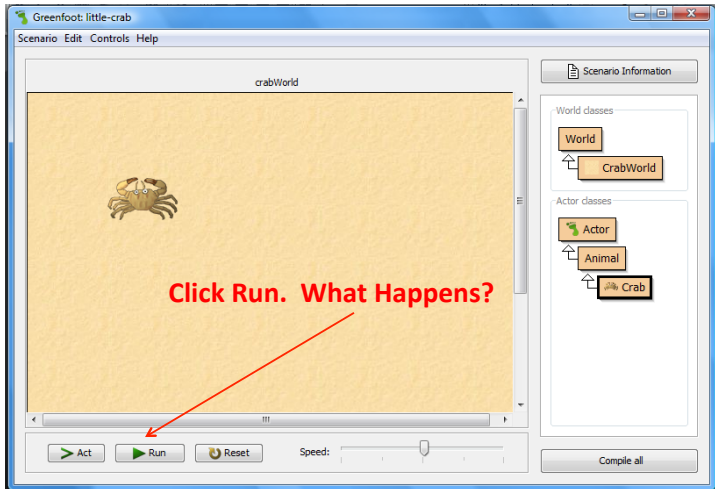
Original slides by Bruce Chittenden
Exercise edits by Scott Blanck

Exercise setup: Open *little-crab* from the book scenarios folder – chapters2-4.

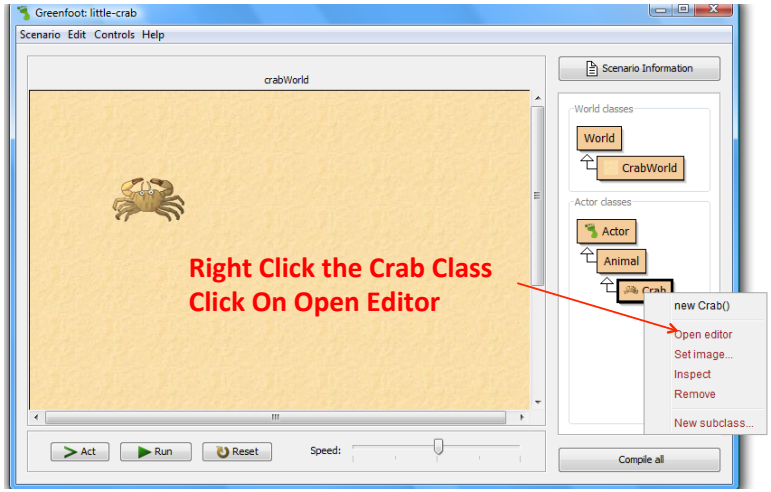
2.1 Little Crab Scenario



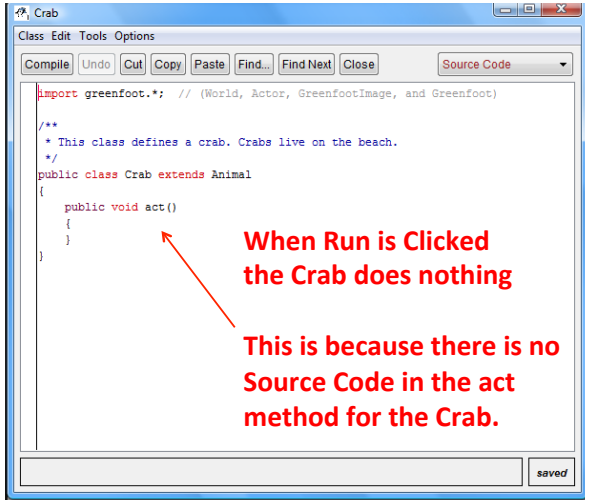
Exercise 2.1



Exercise 2.1



Exercise 2.1



2.2 Making the Crab Move

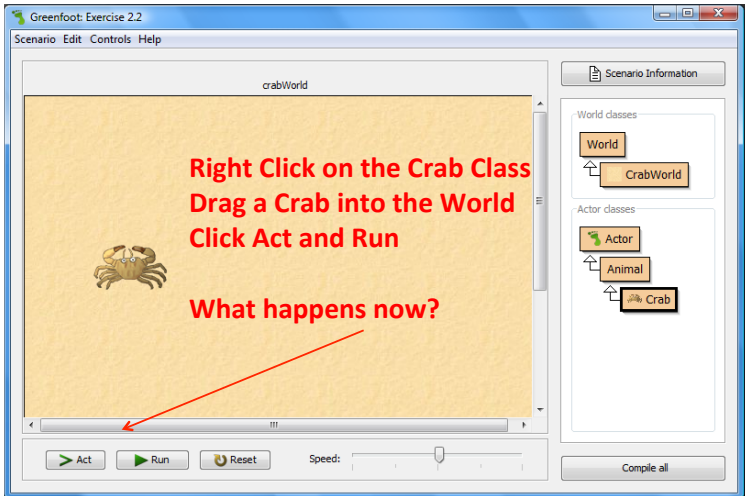
```
import greenfoot.*;  // (World, Actor, GreenfootImage, and Greenfoot)

/*
 * This class defines a crab. Crabs live on the beach.
 */
public class Crab extends Animal
{
    public void act()
    {
        // Add your action code here
    }
}
```

Replace the entire //comment line with

move();

Click Compile

Exercise 2.2

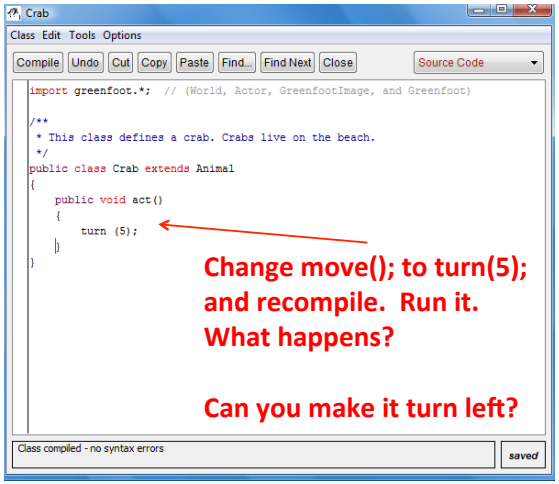


Exercise 2.3

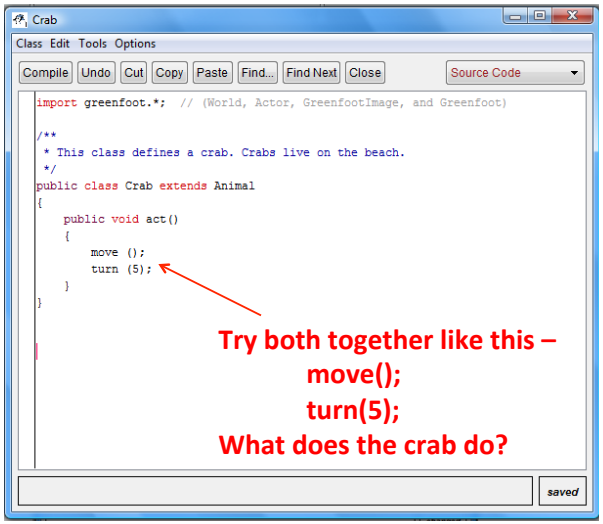
2.3 Turning in Degrees – 0 to 360 starting from due north


```
public void act ()
{
        turn (5);
}
```

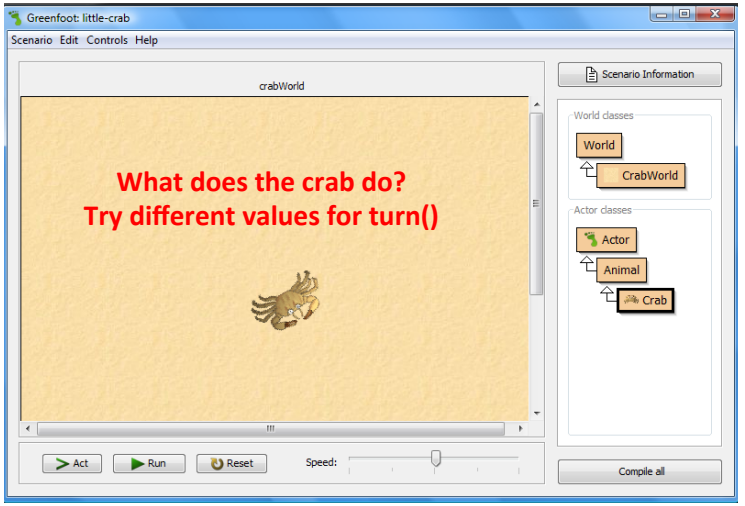
Exercise 2.4



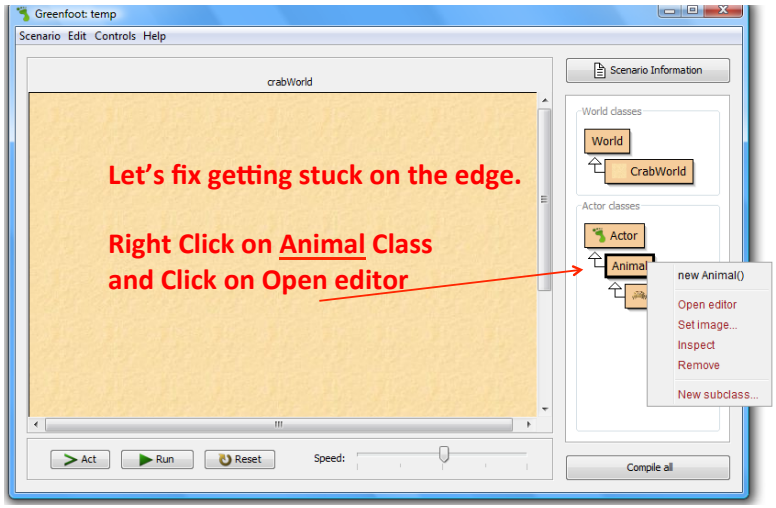
Exercise 2.6



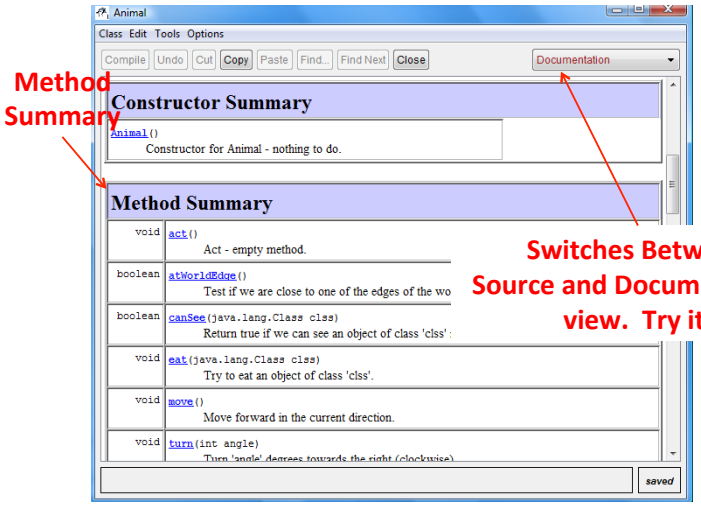
Exercise 2.6



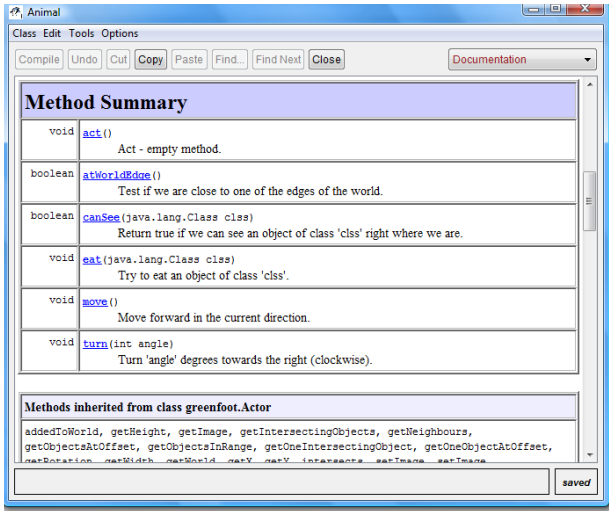
2.4 Dealing with Screen Edges



Documentation View – See what the Animal class can do



Exercise 2.9 – How many methods does the Animal class have?



Method Signatures - Most methods have these three parts in their definition.

Return Type

Method Name

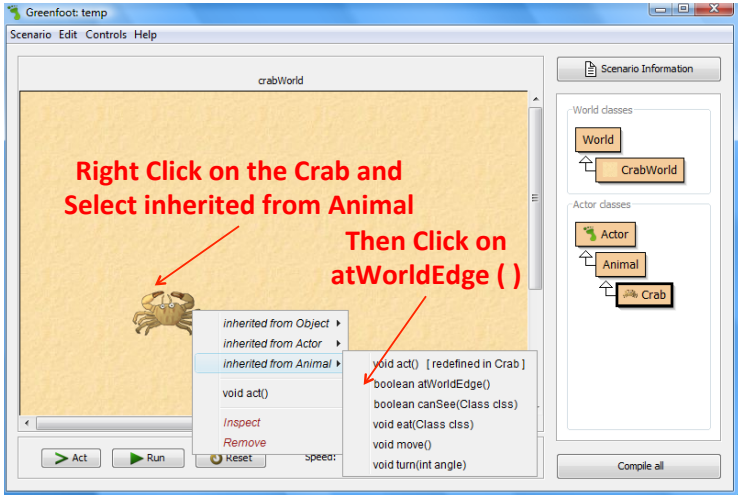
Parameters – sometimes empty

void turn (int angle)

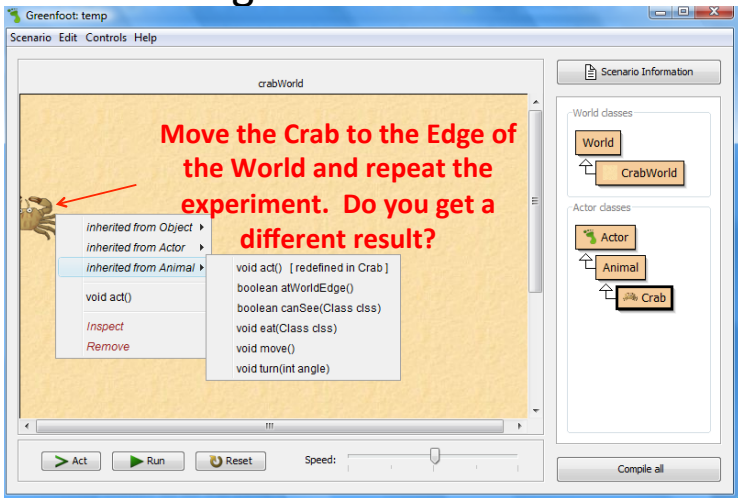
boolean atWorldEdge ( ) - Use this one!

void move ( )

Exercise 2.10 – Execute atWorldEdge. What is the result?



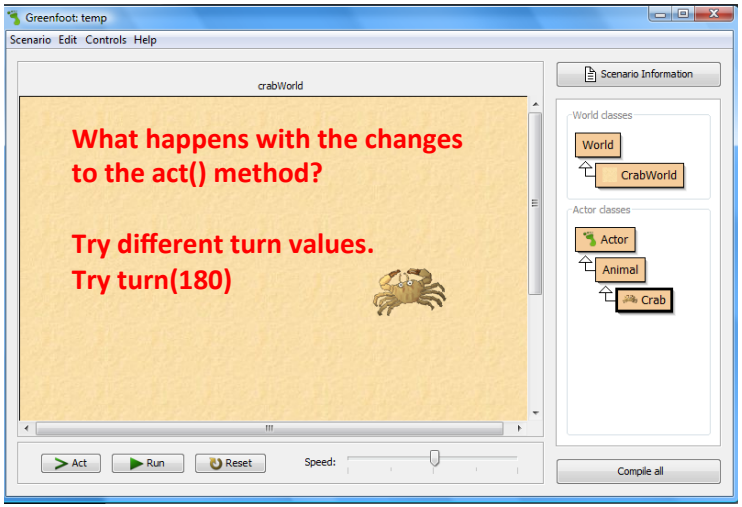
Exercise 2.11 – Run atWorldEdge again at the edge. What is the result?



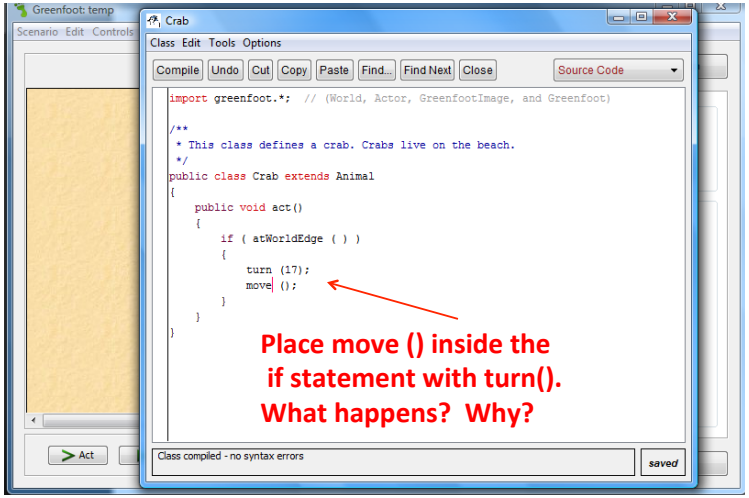
Exercise 2.12 – Edit your Crab act() method to look like this. We want it to turn only at the edge.

```
public class Crab extends Animal
{
    public void act()
    {
        if ( atWorldEdge ( ) )
        {
            turn (17);
        }
        move ( );
    }
}
```

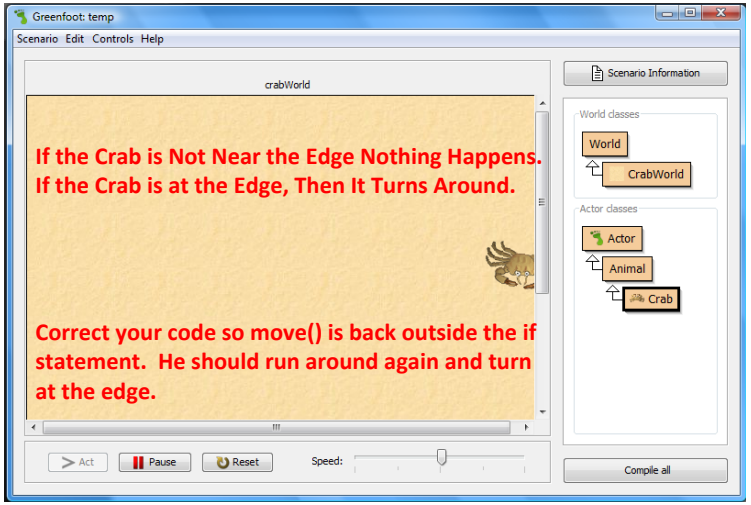
Exercise 2.12



Exercise 2.14



Exercise 2.14



2.5 Summary of Programming Techniques

In this chapter, we have seen how to call methods such as move( ) and turn(x), with and without parameters. This will form the basis for all further Java Programming.

We have encountered a glimpse of inheritance. Classes inherit the methods from their superclasses. Crab inherits methods from Animal.

And, very important, we have seen how to make decisions. We have used an if-statement for conditional execution.