### Lesson 14
**Spider Robot Explores the First Encounter World, Part 4**

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<th>Activity</th>
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<td><strong>Create spiderRobot method “walksForward”</strong></td>
<td>Select <code>spiderRobot</code> in the Object Tree, then methods, then click “create new method” button. Type “walksForward” in the dialog box.</td>
<td>1. <code>spiderRobot.appears</code> method will open in editor window 2. This is a class-level method because all actions are performed by the <code>spiderRobot</code> alone</td>
<td>Textbook page 95 and figures 4-1-3 to 5</td>
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<td><strong>Drag a “Do together” block into the “spiderRobot.walksForward” method.</strong></td>
<td>Hold down the left mouse button on the “Do together” block (bottom of panel), drag it into <code>spiderRobot.walksForward</code> method and drop it over the words “Do nothing”.</td>
<td>1. Commands in this kind of block will be performed or “executed” at the same time. These commands are said to execute <strong>simultaneously</strong>. 2. The “Do together” block is inside the “Do in order” block; we are “nesting” the blocks</td>
<td>Textbook page 37 and figures 2-2-14 and 15</td>
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<td><strong>Make the spiderRobot move forward.</strong></td>
<td>Drag the <code>spiderRobot</code> from the Object Tree into the “Do together” block, select “move” then “forward” then “1 meter”.</td>
<td>Alternate: drag the <code>spiderRobot</code> into the Do in order block. Select “move” then “forward” then “1 meter”.</td>
<td>Alternate method Textbook page 33 and figures 2-2-16</td>
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<td><strong>At the same time, the spiderRobot moves forward, the spiderRobot’s back left leg and front right leg should move down and up at the same time so the spiderRobot appears to be “walking.” The legs should first move down then move up: a sequence of two actions</strong></td>
<td>Moving the back left leg and front right leg <strong>down and up</strong> is a <strong>turn forward and turn backward</strong> in the Alice reference system.</td>
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| Turn the spiderRobot.body. backLeftLegBase.upperJoint forward to make back left leg move “down.” | 1. Click the “+” sign next to the spiderRobot to see the subparts of body and neck.  
3. Click the “+” sign next to body to expand the body subparts.  
3. Click the “+” sign next to backLeftLegBase to see the upperJoint | Textbook pages 38-39 and figures 2-2-17 and 18 |
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<td>Expand the Object Tree to see the spiderRobot subpart “backLeftLegUpperJoint”.</td>
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| Turn the spiderRobot’s backLeftLegUpperJoint forward; arbitrarily select ¼ revolution. | 1. Drag the backLeftLegUpperJoint object into the “Do together” block below the move forward command.  
2. Select “turn” then “forward” then “1/4 revolution”. | Alternate:  
1. Select spiderRobot backLeftLegUpperJoint in the Object Tree.  
2. Drag the “turn” method from the methods panel into the “Do in order” block, then select ¼ revolution.  
Alternate method: Textbook pages 121-124 and figures T-4-1 to 3 |
| How many revolutions do we have to rotate the spiderRobot’s back leg to return it to its original position? | | |
| Return the spiderRobot’s backLeftLegUpperJoint to its original position to simulate the “walking” motion. | 1. Drag the backLeftLegUpperJoint object into the “Do together” block below the last command.  
2. Select “turn” then “forward” then “1/4 revolution”. | Alternate: see above |
| Next, repeat the above steps for the spiderRobot front right leg. | | |
| Expand the Object Tree to see the spiderRobot subpart “frontRightLegUpperJoint”. | 1. Click the “+” sign next to the spiderRobot to see the subparts of body and neck.  
3. Click the “+” sign next to body to expand the body subparts.  
3. Click the “+” sign next to frontRightLegBase to see the upperJoint. | Textbook pages 38-39 and figures 2-2-17 and 18 |
|---|---|---|
| Turn the spiderRobot's frontRightLegUpperJoint forward; arbitrarily select ¼ revolution. | 1. Drag the frontRightLegUpperJoint object into the “Do Do together” block below the last command.  
2. Select “turn” then “forward” then “1/4 revolution”. | Alternate: 1. Select spiderRobot frontRightLeg UpperJoint in the Object Tree.  
2. Drag the “turn” method from the methods panel into the “Do in order” block, then select ¼ revolution.  
Alternate method: Textbook pages 121-124 and figures T-4-1 to 3 |
| Return the spiderRobot’s frontRightLegUpperJoint to its original position to simulate the “walking” motion. | 1. Drag the frontRightLegUpperJoint object into the “Do Do together” block block below the last command.  
2. Select “turn” then “forward” then “1/4 revolution”. | Alternate: see above |
| Call the spiderRobot.walksForward method. | Drag the “spiderRobot.walksForward” method into World. spiderRobotExplores and drop it below the “appears” method inside the “Do in order” block. | Sequence of method calls  
1. When the world starts, World. myFirstMethod method is called.  
2. World.myFirstMethod method makes a call to World.spiderRobotExplores.  
3. World.spiderRobotExplores method makes a call to spiderRobot.appears then to spiderRobot.walksForward.  
Textbook pages 96-97 and figures 4-1-6 and 7 |
Click the play button. Did the spiderRobot’s legs move? Why not?

Think about the problem in terms of sequential vs. simultaneous commands. We’ll fix this problem in the next lesson.

Remember to save your Alice world. Continue developing your own world, group projects, or advanced work with an instructor.