The Bumper Turtles model created in this lab requires the use of **Boolean logic** and **conditional control flow**. The basic rules are:

1. Each turtle starts in the middle of a random patch.
2. At each tick, every turtle looks ahead one patch in its current heading.
   a. If the patch ahead is black then the turtle makes a U-Turn.
   b. If the patch ahead is blue, then the turtle makes a 90° left turn.
   c. If the patch ahead is red, then the turtle makes a 90° right turn.
   d. If the patch ahead is green, there are two options available: if there is another turtle in that patch then the turtle makes a U-Turn; otherwise, the turtle runs one step forward on the turf.

<table>
<thead>
<tr>
<th>Module 5: Bumper Turtles Grading Rubric (20 Points Total)</th>
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<td><strong>Done</strong></td>
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| 1        |            | A:  
  - Submit one document to your instructor: NetLogo source code named: M4.firstname.lastname.nlogo.  
  - The first few lines of your code tab are comments including your name, the date, your school, and the assignment name. |
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<td>3</td>
<td>B: The code in the code tab of your program is appropriately documented with “inline comments”.</td>
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<td>2</td>
<td>C: Complete all sections in the Info tab.</td>
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<td>1</td>
<td>D: Your Setup button creates at least 2 turtles. Each turtle must have unique coordinates. Every time the setup button is pressed, the turtles you create are always created in the same set of unique locations.</td>
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<td>E: The Go button moves turtles along a path that loops.</td>
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<td>F: There are at least a total of 10 black, red and/or blue patches that affect the path of the turtles. And 1 of these is a group of 3x3 patches made using the <strong>AND</strong> keyword.</td>
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<td>3</td>
<td>G: Whenever one of your turtles turns from its path to avoid another turtle, it later returns to its path. Hint: add a black patch to cause the turtle to turn back around.</td>
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<td>H: There is at least one patch where two different turtle paths cross.</td>
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<td>I: (Extra Credit) All of your turtle movement works as required. You have at least 5 turtles Your turtle paths cross each other in at least 5 places There are at least 25 black, red and/or blue patches that affect the path of the turtles.</td>
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<td>J: (Extra Credit) Make the program in 3D (see “Bumper Turtles” video for details). You will need a separate netlogo file. Please name it M4.firstname.lastname.3D.nlogo.</td>
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