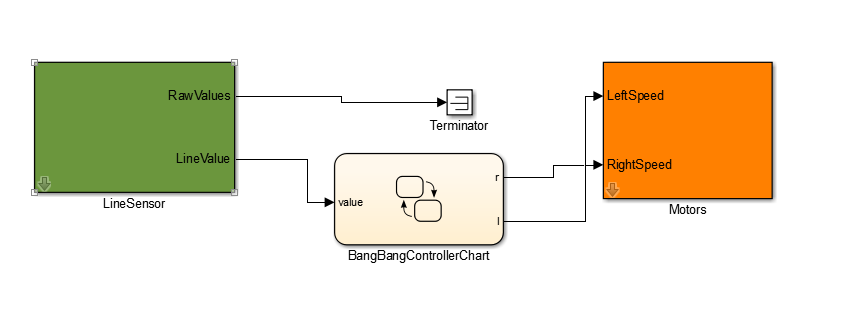
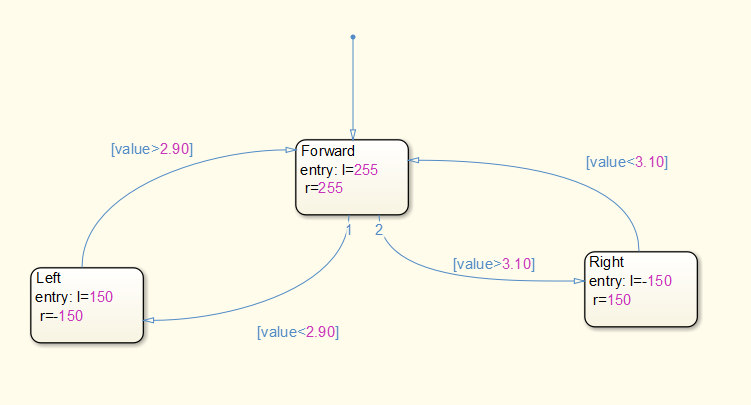
Goals: To introduce “BangBang” Line sensing by using the “Line Value” output on the Line Sensor block.

Standards Covered: (f), (i), (j)

Sequence:

1. Take readings of the line sensor in external mode paying attention to the “Line Value” rather than the “Raw Values”. Record the values for being on the line and then off and figure out what a good threshold point for the largest jump in this position is when moving the MiniQ across a line of black tape. *(10 min)*
2. Discuss line following relative to the “Bang Bang” method of movement. Basically, swerving on and off of a line in a “skipping” pattern. *(5 min)*
3. Give students time to attempt creating a bang-bang line follower before presenting them with this Simulink model. *(60 min)* 
4. The chart values will differ from student to student but the basic template for a chart is as follows: *(30 min)*



1. Activity: create a series of different shaped courses for the robot to follow. The Bang Bang line following technique as well as dead reckoning can be used to complete some of the shapes. *(30 min)*

Evaluation:

1. Record the amount of times a student completes a taped shape that the MiniQ must line follow around. For this, everyone’s Simulink model should be slightly different as a result of changed variables.

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