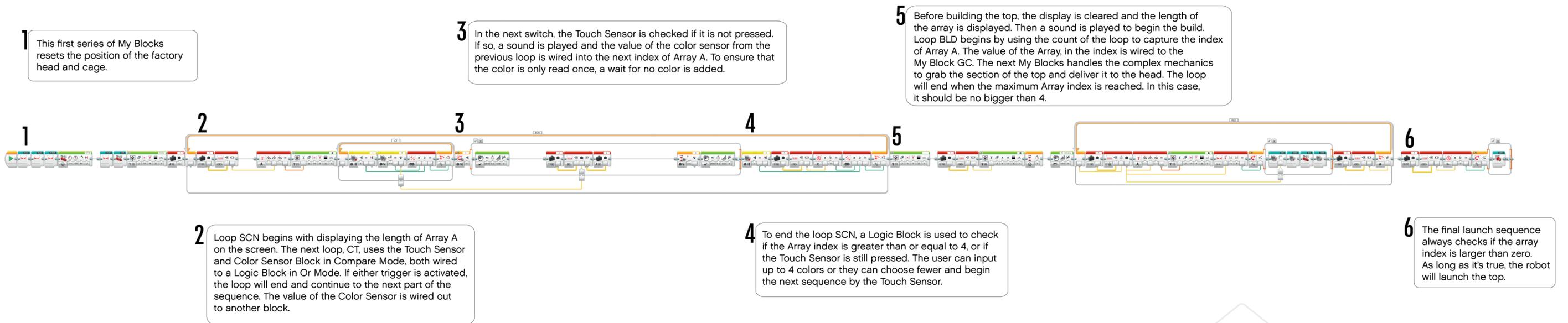# Program Descriptions

Spinner Factory

Overview

The Factory Program controls a series of complex mechanics to make a spinning top. It first collects a series of inputs, then creates the top, and finally launches it.

1
This first series of My Blocks resets the position of the factory head and cage.

3
In the next switch, the Touch Sensor is checked if it is not pressed. If so, a sound is played and the value of the color sensor from the previous loop is wired into the next index of Array A. To ensure that the color is only read once, a wait for no color is added.

5
Before building the top, the display is cleared and the length of the array is displayed. Then a sound is played to begin the build. Loop BLD begins by using the count of the loop to capture the index of Array A. The value of the Array, in the index is wired to the My Block GC. The next My Blocks handles the complex mechanics to grab the section of the top and deliver it to the head. The loop will end when the maximum Array index is reached. In this case, it should be no bigger than 4.

2
Loop SCN begins with displaying the length of Array A on the screen. The next loop, CT, uses the Touch Sensor and Color Sensor Block in Compare Mode, both wired to a Logic Block in Or Mode. If either trigger is activated, the loop will end and continue to the next part of the sequence. The value of the Color Sensor is wired out to another block.

4
To end the loop SCN, a Logic Block is used to check if the Array index is greater than or equal to 4, or if the Touch Sensor is still pressed. The user can input up to 4 colors or they can choose fewer and begin the next sequence by the Touch Sensor.

6
The final launch sequence always checks if the array index is larger than zero. As long as it's true, the robot will launch the top.

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![LEGO MINDSTORMS education EV3]

Program Descriptions

Spinner Factory

RLC

My Block RLC resets the launcher mechanism. There is a Touch Sensor as a mechanical limit to ensure proper position.
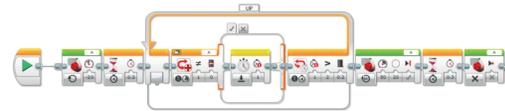
RWR

My Block RWR resets the wrist of the robot. The motor is moved for time until a stall, and then back the other direction.

RSP

My Block RSP resets the postion of the cage by moving it to a color. If it's at the end of the track, it will only move 180 degrees.

RUD

My Block RUD resets the up and down mechanism. The mechanism is moved up for .3 seconds, then loop UP begins. The switch checks to see if the motor current is reading anything other than zero. If it is, and the motor is still moving, the timer will reset. If it is no longer moving for 2 seconds, the loop ends. Lastly, the motor is moved back 20 degrees, and brake released at its starting position.
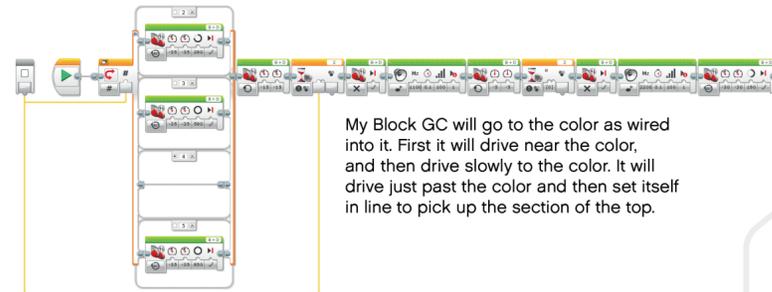
GRB

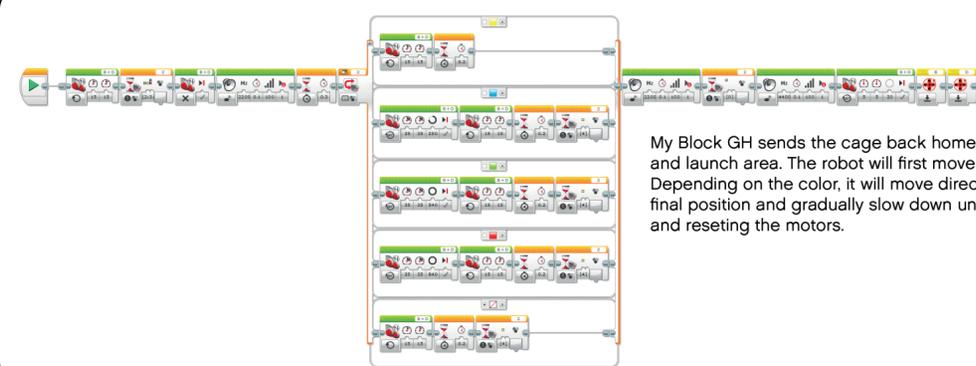My Block GRB will grab the section of the top and bring it up.

DRP

My Block DRP will drop the section of the top on to the centerpiece.

GC

My Block GC will go to the color as wired into it. First it will drive near the color, and then drive slowly to the color. It will drive just past the color and then set itself in line to pick up the section of the top.

GH

My Block GH sends the cage back home to the drop and launch area. The robot will first move to a color. Depending on the color, it will move directly to the final position and gradually slow down until stopping and resetting the motors.

LNC

My Block LNC is the launch sequence. It starts with setting the head to the spinner, then the robot releases the lock of the top. Once released, the head will drop onto the top and begin the spin sequence.

The spin sequence will slowly raise the head while shaking the top. After 5 seconds of shaking, the loop RMP will slowly increase the speed of the spin and run it at full speed for 1 second. Once at full speed, the head will raise and the robot will release the top with My Block RLC. Lastly, the head is raised just a little more to its starting position.

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