Programming with Containers

The first thing you should do for this program is to make sure your container is empty. It is probably empty at the start of a program but just like in real life, it is a good idea to clear out your container before you put something into it. To do this we'll go to the Reset Palette from the Functions Palette and choose Empty Container.  Next we need to tell your program which container we want to use. We're going to use the red one so go to your Modifiers Palette and drag the Red Container icon  under the Empty Container in your program and wire them together. (Make sure *not* to pick the Red Container Value icon.) Now, go back to the Reset Palette and add the Zero Angle Sensor icon  to your program. Next, go to the Modifiers Palette and add the input port modifier that your Rotation Sensor is attached to and wire it to your Zero Angle Sensor icon.

Now that you have reset all the containers and sensors, you'll want to start the robot moving forward. Tell the robot to keep going forward until it encounters a black line. After your robot reaches the black line, we want to tell your robot to remember how many clicks of the rotation sensor it took to reach the black line. To do this, you are going to put the value of the rotation sensor into the red container. Go to the Containers Palette and drag the Angle Container icon  to your program. This icon puts the reading of the angle sensor into a container but you need to tell it which sensor port to read from and which container you want to put it in. So go to the Modifiers Palette and drag the Red Container icon and the input port modifier that your Rotation Sensor is attached to, and wire them to the Angle Container in your program.

Now that you have saved the number of rotations it took to reach the black line, your program is going to reset the rotation sensor to zero, again, and back up until the number of rotation sensor clicks moving backwards equal the number of rotation sensor clicks it took to get to the line. Go to the Reset Palette again and choose the Zero Angle Sensor again (or copy and paste it from earlier in the program). Don't forget to tell it which sensor port it is attached to. Next, add icons to tell your robot to move backwards. After that, go to the Wait For Palette and drag the Wait For Rotation icon to your program. The Wait For Rotation icon needs to know how many rotation sensor clicks it should watch for before letting the program continue. Up until now, you would have gone to the Modifiers Palette and chosen the Numeric Constant icon and typed in a number. But you can't tell your program a number since the number of clicks will change depending on how far the line is from our robot. So instead of wiring a number to your program, go to the Modifiers Palette and drag the Red Container Value  icon to your program and wire it to the Wait For Rotation icon. Make sure you use the Red Container **Value** icon and not the Red Container icon. In this case, the word value means whatever is inside of the container. Now that your program is waiting for the backward rotation sensor clicks to equal your forward rotation sensor clicks, all you need to do is tell your robot to stop its motors when it has backed up as far as it went forward. Don't forget to wire all your icons together before you try it out.