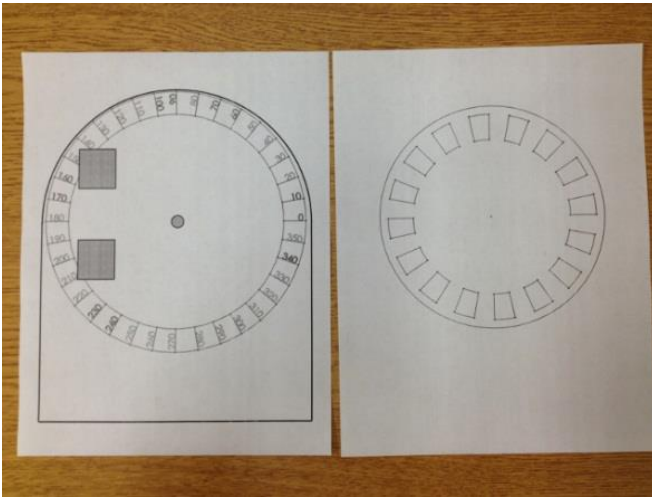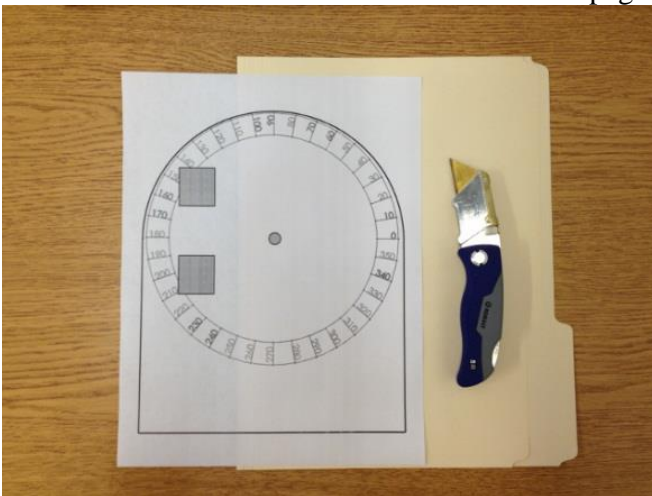# Rotary Encoders & Human-Computer Interaction — Building Instructions
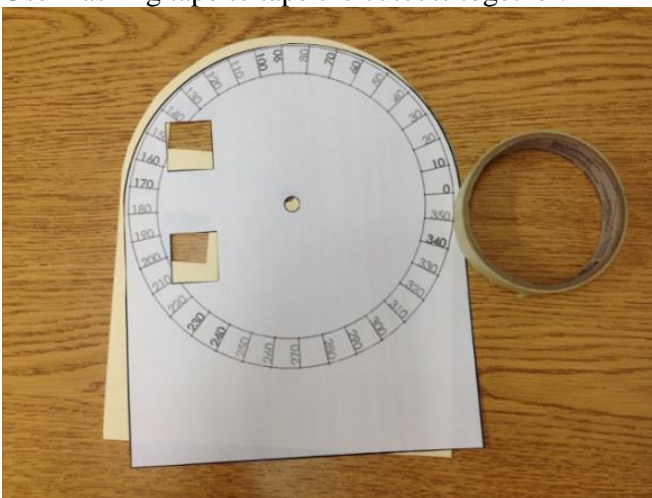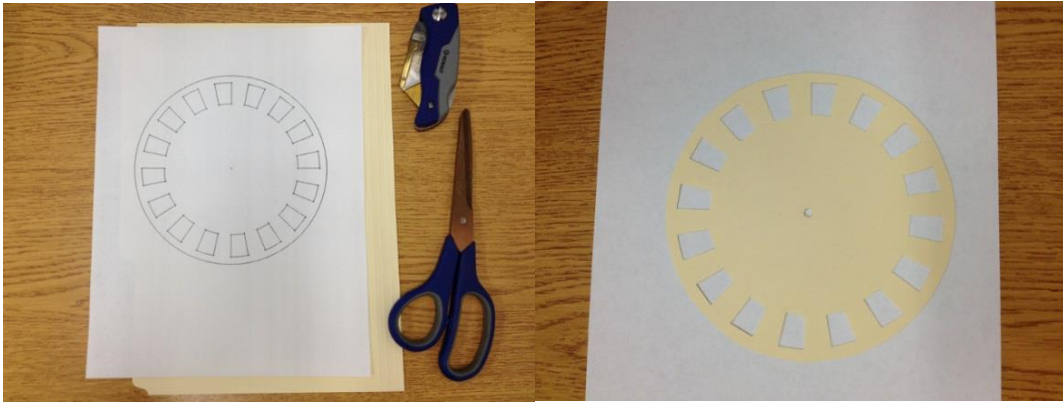
1. Print out the rotary encoder files.

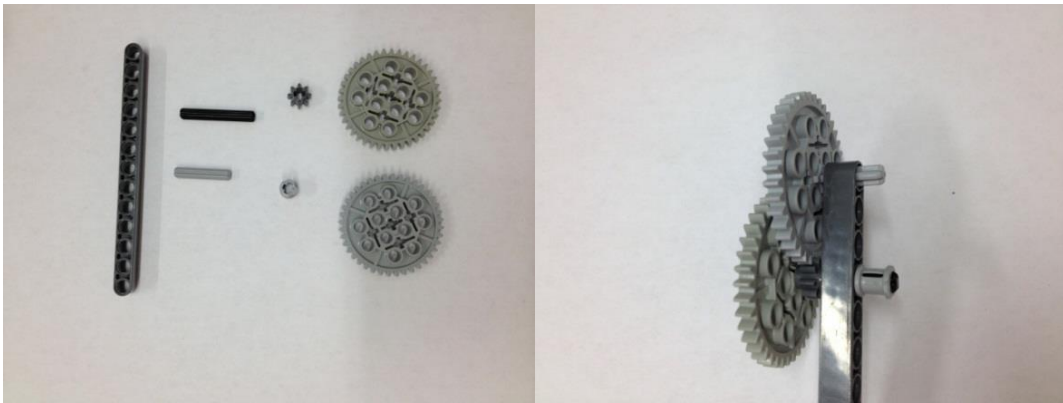2. Use a box cutter and a folder to cut out the first page indicating the angle.

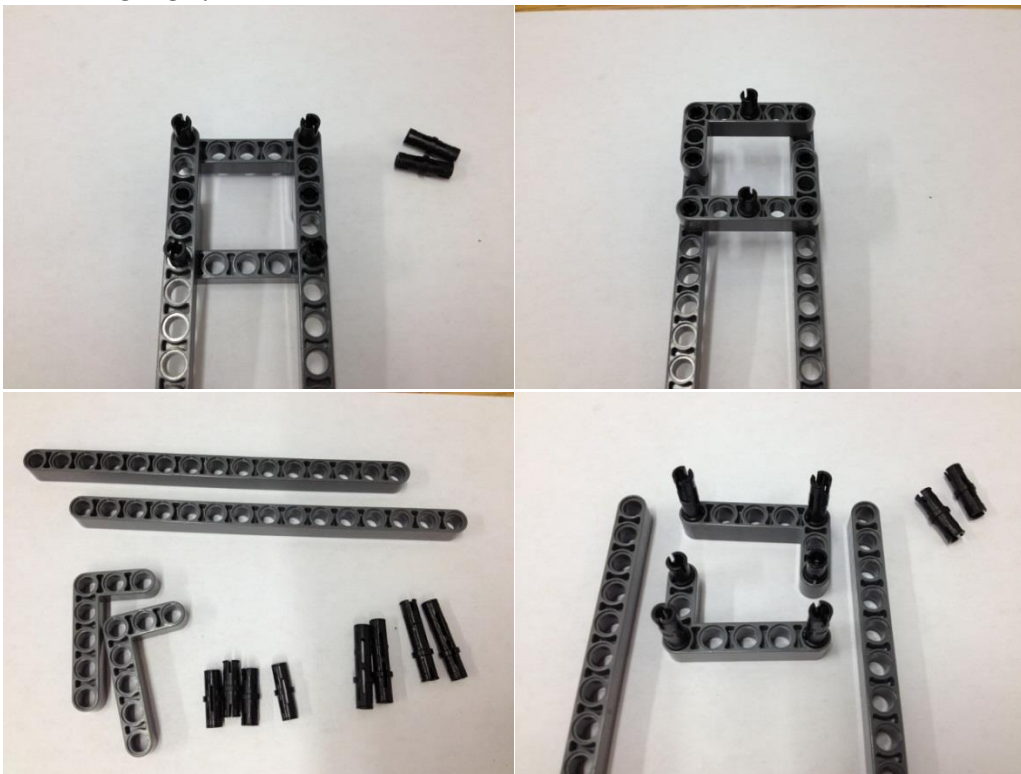3. Use masking tape to tape the cutouts together.

4. Use a scissor, box cutter, and folder to cutout the rotary wheel.

5. Obtain the specified Lego® pieces and construct the gear train, as depicted.
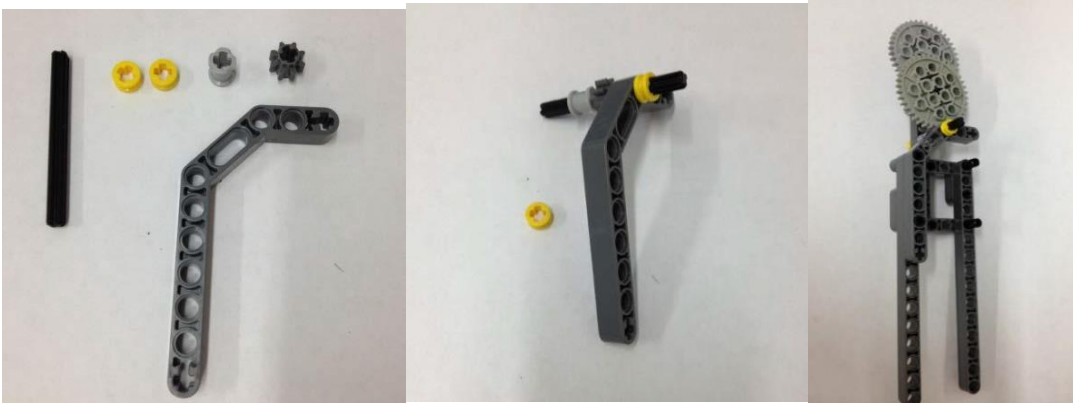
6. Build using Lego pieces.
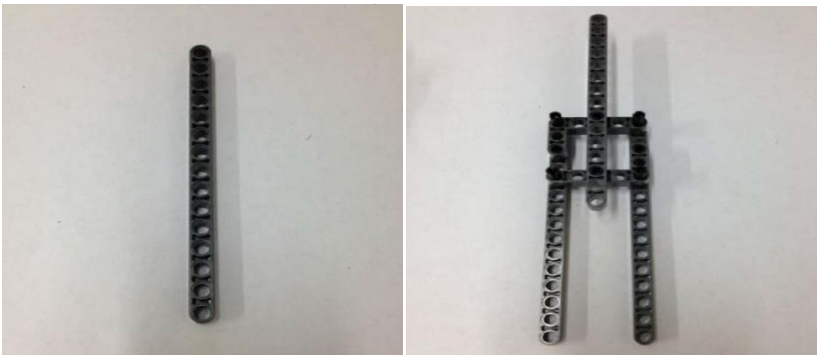
7. Combine the parts in steps 5 and 6.

8. Now build the handle; obtain the pieces and proceed to build.

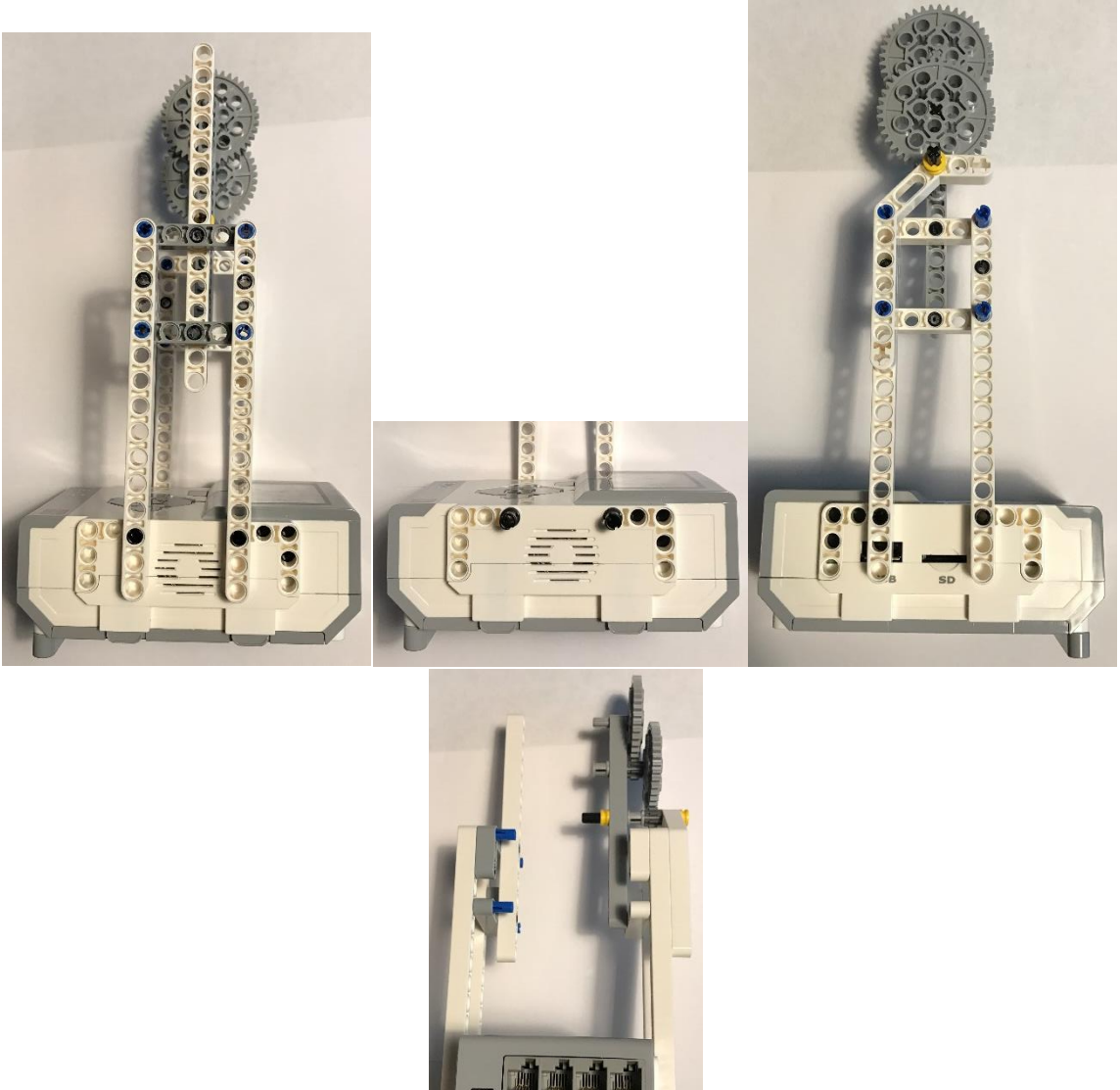9. Obtain the remaining pieces and continue building.

10. Use another beam and connect it to the part in step 9.

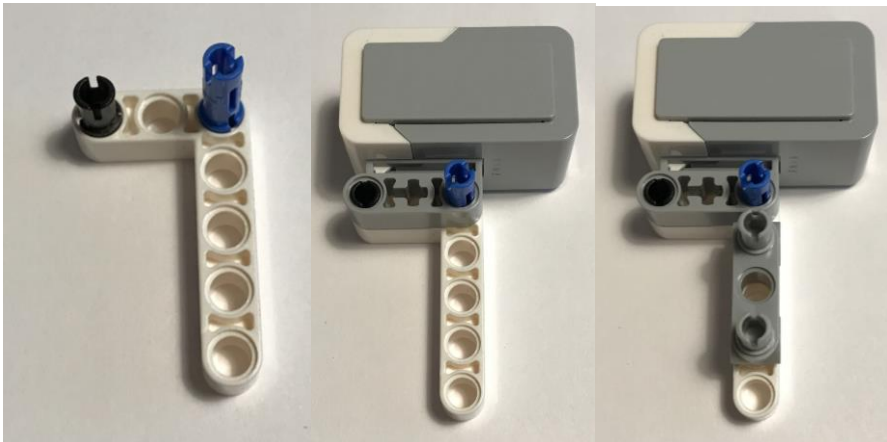11. Grab 4 connector pegs and connect them to the sides of the EV3, as shown.

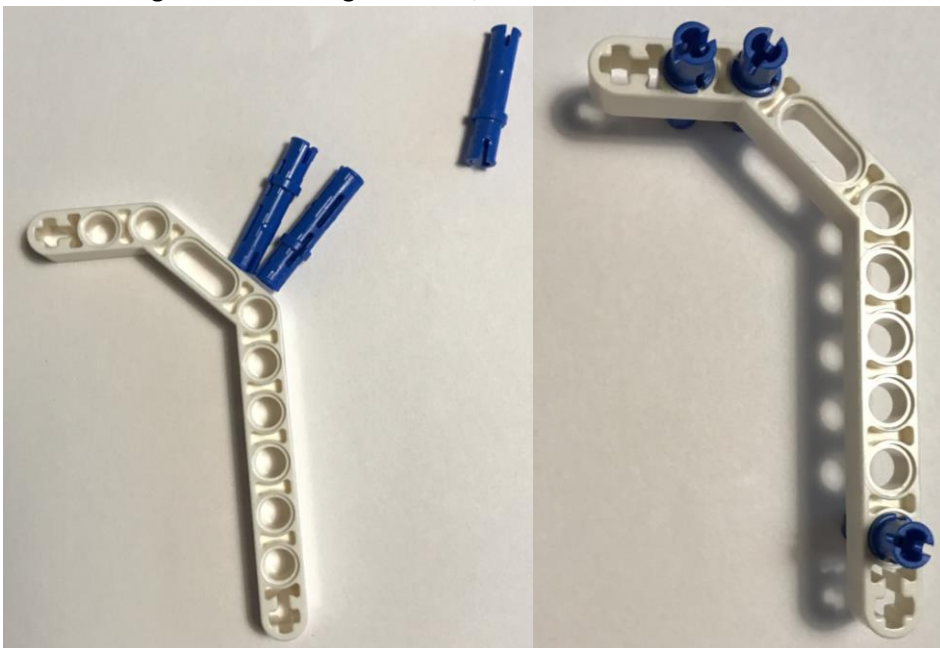12. Use the parts in steps 8 and10 to connect to the EV3.

13. Now include the color sensors. Find the following pieces:

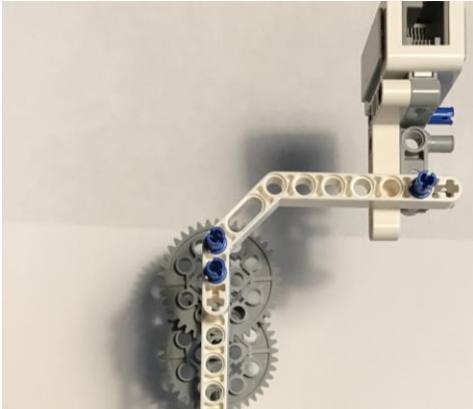14. Assemble the pieces according to the pictures below:

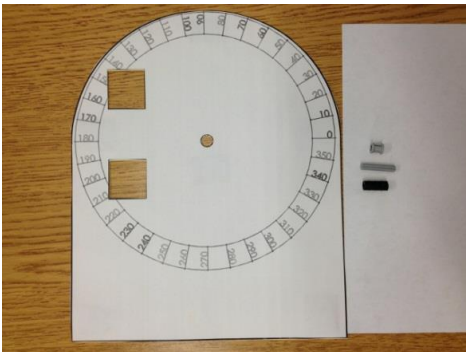15. Mount the light sensors using a bracket, as shown below:
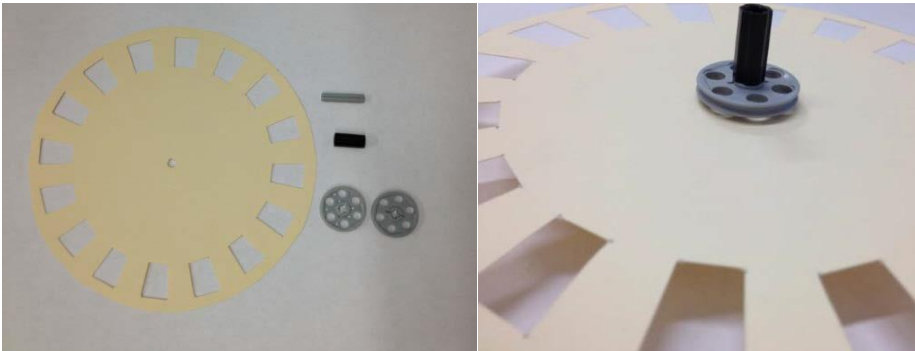
16. Connect the bracket to the sensors.

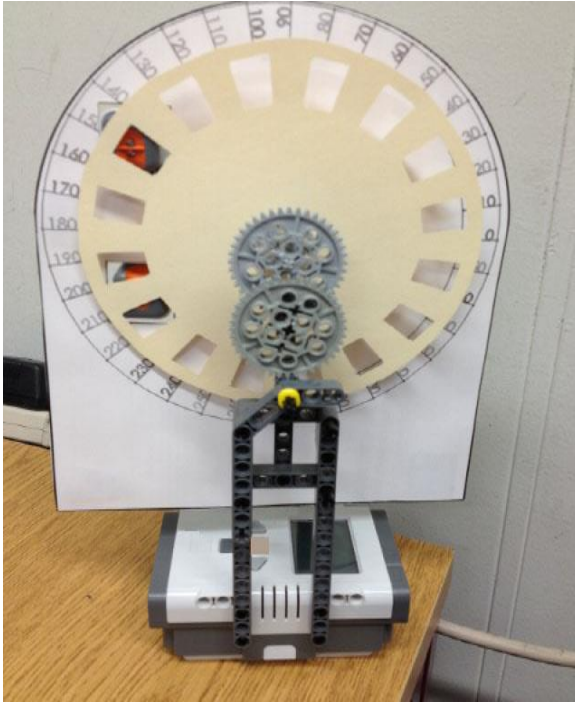17. Connect the bracket to the structure in step 12.

18. Mount the angle indicator using the connector and axle. Be sure to fit the color sensor through the holes.

19. Mount the encoder wheel, using a connector, axle, and wheels for reinforcement.

20. The assembled device should appear as below.

21. Download the free trial RobotC programming language for LEGO EV3 from www.robotc.net.

22. Go through the instructions to install RobotC.
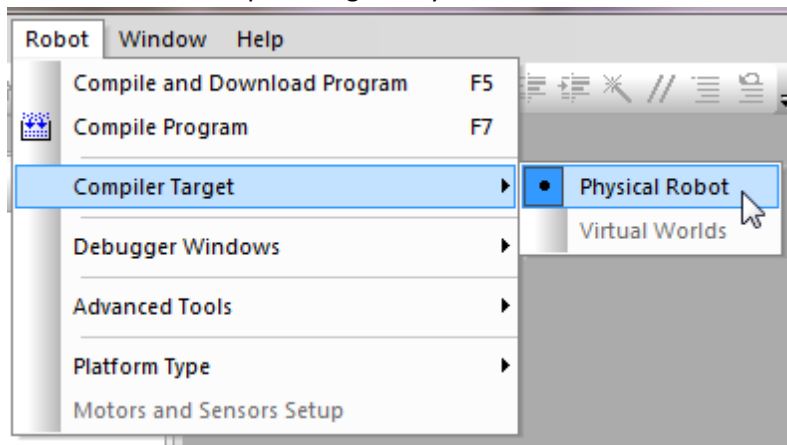23. Open RobotC.
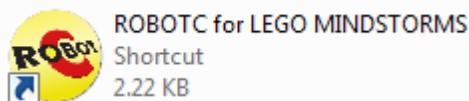
24. Activate the free trial license by going into Help>Manage License>Add License.
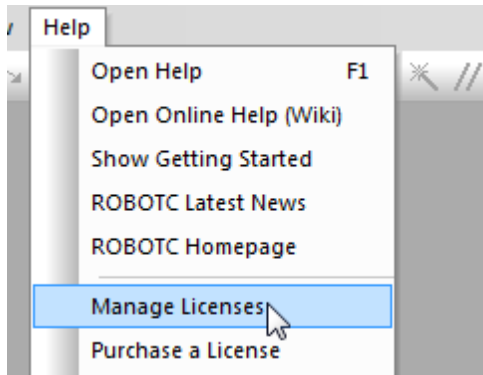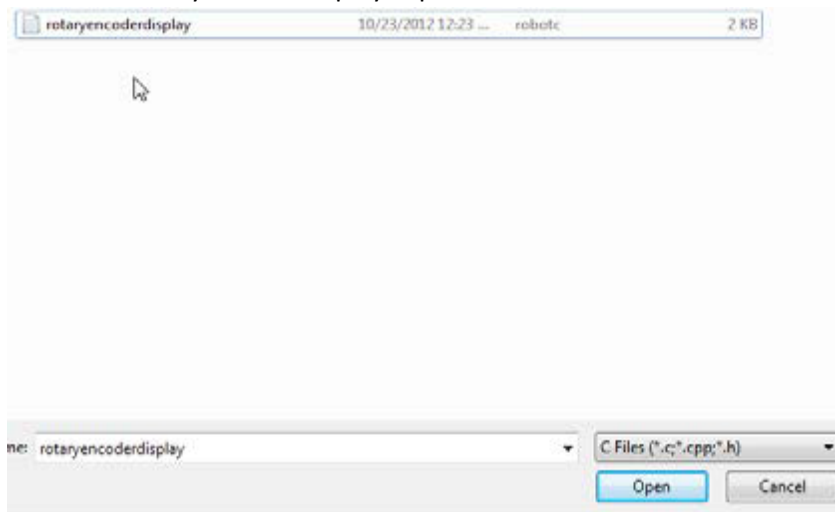
25. Select Product>ROBOTC for LEGO MINDSTORMS>Start Trial>Yes>Close>Close.
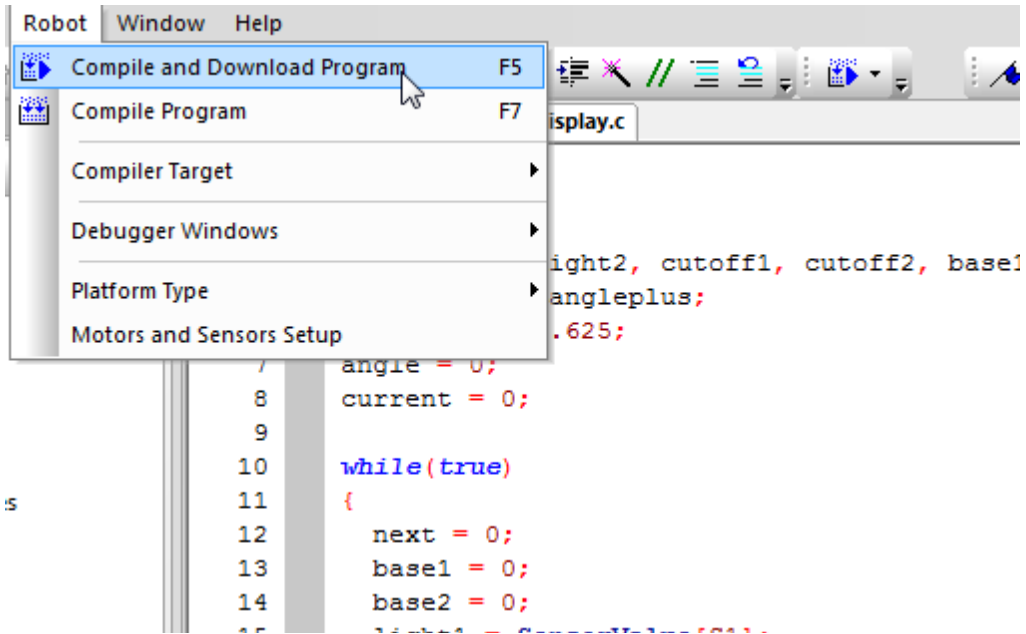26. Click on Robot>Compiler Target>Physical Robot.

27. Open the supplied file by going into File>Open and Compile> "pick the file from saved location">rotaryencoderdisplay>Open.

28. Connect the LEGO EV3 to the computer with a USB cable.
29. In RobotC, download the supplied program into the Lego EV3 brick.

30. The device is now ready to be used.