Week 4 Section – First Project Day Instructions

1. Start with no batteries in RSLK.
2. Launch Energia.
3. Tools | Board | Boards Manager, scroll down to Energia MSP432 EMT RED boards. Check version #; should be 5.6.3 and have "INSTALLED" next to the version number.
4. insert USB cable, check for green LED.
5. Remove USB cable.
6. Push the slide switch on the rear edge of the Chassis Board to OFF. It will stay in that position for the remainder of the course.
7. (VERY IMPORTANT: YOU WILL *KILL YOUR CAR* IF THIS JUMPER IS *NOT* REMOVED!) Be sure the 5 V jumper is missing; that is, there is a gap at the 5 V position. The gap may be shrouded under a piece of tape. Check to be sure that a gap exists at the 5 V position. If there is no tape, ask your TA to help you find the 5 V position.
8. Insert batteries.
9. Push the POWER pushbutton switch. Both the green and a blue LED should light up.
10. Push the POWER pushbutton switch again. Both LEDs should turn off.
11. insert USB cable.
12. File | Examples | 01.Basics | Blink
13. Click on right-facing arrow in upper left corner of window.
14. Blinky should compile and load successfully, red LED should start blinking.
15. In lines 28 & 30, change the numbers in the arguments to delay().
16. Click on right-facing arrow in upper left corner of window.
17. The red LED should blink at a different rate.
18. Make sure the Off-On slide switch in the lower left corner of the Chassis Board is in the "Off" position.
19. Push the Power pushbutton switch in the lower left corner of the Chassis Board. Check for both blue and green LEDs.
20. Download Basic Code text file from CCLE, Site Info | Project Materials, store in some appropriate place.
21. In Energia, File | New; Delete existing code; Paste Basic Code into the sketch.
22. Pick up the RSLK so the wheels are off the tabletop. Click on the right-pointing arrow. After compile and download, one wheel should turn, one yellow LED on right front of Chassis Board should flash.
23. Power down the Chassis Board by pushing the Power button again.
24. Download the MSP432 Pinchart on CCLE, Site Info | Project Materials.
25. Note the pin numbers for direction, non-sleep (nslp), and PWM.
26. Modify the Basic Code to make the RSLK do a doughnut (spin like a top). This requires that the wheels spin in opposite directions.
27. Download ECE3 from CCLE, Site Info | Project Materials. Do NOT unzip the zip file.
28. Energia | Sketch | Include Library | Add .ZIP Library … navigate to ECE3.zip and select.
29. Sketch | Include Library; ECE3 Library should appear on pulldown list
30. Navigate to ~/Documents/Energia/libraries/ECE3/examples/IR_Sensor_Example; double-click IR_Sensor_Example.ino. This opens IR_Sensor_Example in Energia.
31. Navigate to ~/Documents/Energia/libraries/ECE3/src/ECE3.cpp
32. After `QTRSensors IR;` paste

```
#define P5_0 45
#define P5_2 61
```

33. Save
34. Power up the Chassis Board.
35. Compile and download to the RSLK.
36. Tools | Serial Monitor should show 8 columns of numbers from ~500 to ~2000, depending on amount of reflection from surface. If you place the car on a white sheet of paper, all 8 columns should be in the 500-800 range. If you pick up the car and hold it over the floor at desktop height, all 8 columns should read ~2500.