

ECE 372a Final Project Description
Points: 200 (20% of your final grade)

Fall 2014

- a) **Documentations** (50 points): All documents must be *submitted on D2L* at the due date in order to receive points.

Assignment/Document	Presentation Date (in class)	D2L Submission Due Date
Preliminary Design Review (PDR) (10 pts)	Thurs November 6, 2014 (Team 201-210) Tues November 11, 2014 (Team 211-213)	Friday November 14 by 11:59 PM
Critical Design Review (CDR) (10 pts)	Thurs November 20, 2014 (Team 220-211) Tues November 25, 2014 (Team 210-201)	Friday November 28 by 11:59 PM
Final Report (including all project source code) (30 pts)	None	Saturday December 13 by 11.59 PM

- b) **Project Demo** (150 points):

- Meeting step C requirement (100 points)
- Meeting step B requirement (125 points)
- Meeting step A requirement (150 points)

Note: Team member evaluation will be used to determine your final points for the final project.

Two due dates for the demo

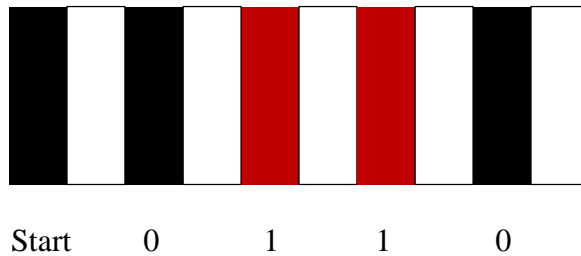
- **Mid-final project demo (demo step C) is Friday November 21st by 5 PM.**
Your team will demo step C requirement.
If your team cannot meet the step C requirement by this date, your step C points will be deducted by 20 points.
- **The final demo (demo all required steps (including step C) dates are December 10th (5 PM)** [During class time, lab session and open lab sessions].
 - At this time, your team will show that your robot/car *meet all requirements*. This means that, at this time, your car/robot should still be able to follow the track/line (step C) while completing the requirements for steps B and A.
 - If your team does not successfully demo step C at the mid-demo date, your team can get 10 points back if your car/robot meet step C requirement at your final demo.

Note:

- There is **NO late demo** for the final project. On the last day of the due date, your final project will be evaluated by an instructor and the points will be given accordingly.
- No explanation of your code required for the final project after your team finishes the demo, unless asked by TAs or the instructor.

Step C Requirements: Line-following robot: The robot should be able to follow the designed track from the starting point to the ending point, then turn around and go back to the starting point. The track is on the floor in ECE 321 lab (our lab)).

Step B Requirements: All requirements for Step C and the robot should be able to scan/read 2 binary information bars placed along the tracks and display the information on the LCD. See actual information bars your team will use in the lab. Below is one example.



The first black-colored stripe signifies the beginning of information. *Information bits* are always in *between the white-colored stripes*. From the above, the binary information bits are 0110.

During the demo for step B, TAs or an instructor will randomly choose 2 information bars that your team will use for every time that you attempt to demo step B.

Step A Requirements: All requirements for Steps C and B plus an additional feature. The followings are some ideas for an additional feature:

- a. Make music along the way (this has to be programmed in the code and the provided 8-ohm speaker can be used).
- b. Use radio frequency (wireless) remote controller
- c. Add sensor(s) that change (or controls) the robot's behavior, for example:
 - i. Sound remote/Light remote
 - ii. Ultrasound sensor (obstacle detection)
 - iii. Other sensors
- d. Others: your team is welcome to come up with additional feature(s). Make sure you have a discussion with the instructor before your team implements it.

Note: also think about how you will test your additional feature(s).

Bonus points:

- (10 points) If you team robot/car can complete the small loop in the middle of an A track (see TAs for more details) while following the designed track.

- If time permits and there are teams who show interest, on the last day of the due date or the last day of class, we can have a racing event. The first 2 teams whose robot/car can complete the designed track (step C) the fastest get 5 more points.