

Final Design Project Report (40%)

Due Friday, Final's week

The final design project report should be a professional document, generated using a word processor. Your report should contain graphs, tables drawings and equations that will clarify the text. You also need to make sure to reference all ideas, equations, figures or quotes that you take from other sources.

Your group is acting as a sub-team within a larger design team. Therefore, the intended audience for the report is the larger design team. Your goal is to convey the results of your performance analysis, your prototype testing (i.e., your component test results), and your recommendations for the design of the robot machine. **The usual standard for preparing a report like this is as follows: the reader should be able to reproduce your analysis and testing, and build the final design, without having to ask you any questions. (Note that the scenario of a sub-team performing work for a larger team, including reporting, is how Boeing designs jets and Microsoft writes software.)**

The report should contain the following elements:

Cover Page

Design to Specification Report (name of the report)
Group Number: (Robowheelchair #xxxx)
Student Names: (names of all your group members)
ENGR 100A
Date:

In the report, each item should be separated by enough space to fill the whole page and give the document a good-looking appearance. The content of the report should includes:

1.0 Introduction

This section briefly lays out the problem and the requirements (i.e., the specifications and constraints). It should end with a goals/objectives statement. After reading this section, the reader should know in broad terms what you were trying to do, and your goals.

2.0 Analysis

This should describe your analytical approach to arriving at an optimum robotic vehicle design. Justify key feature of your design using theory, equations or good engineering reasoning or based on the results you got from the component test results. (For example, you can state that in maintaining a mechanical equilibrium, the center of mass of the car should set low to the ground to ensure stability and prevent it from tipping during the competition. For the component test, you can state that the optimal output power increase

with the increase in electric potential or by a gear design) Describe your procedure for optimization. Also identify any non-ideal conditions not included in your analysis if you can. On what basis did you exclude their consideration? This section should end with a clear statement, including specific numbers, of your conceptual design.

3.0 Prototype Construction

This section presents details on the prototype design. Here you need drawings that describe the exact shape of the cuts, angles, bevels, etc., How will the pieces be joined together? In what order will they be assembled? This section is a road map that describes how to build the prototype. It should include graphs, drawings to help visualize your design. You should discuss any problem occurred in both the hardware design and the software design. You should also discuss the reasons that causes the build team to build something different than you envisions.

4.0 Performance Results and Discussion

This section briefly presents the results of the performance test and the results in the competition. You should compare the overall performance against that projected in analysis. Was the outcome of the competition more or less as you expected? What caused the machine to fail to compete successfully in the competition? Was the failure due to the hardware or software design? With the new information you have acquired from the competition, how would you change your design if you have to do it over?

5.0 Conclusion and Recommendations

Bring out the major points you feel are worth emphasis. Make any recommendations you feel are appropriate. This should be a brief, bottom-line summary. You generally do not bring anything new into a conclusion section. Instead, this simply restates the key points from the body of the report.

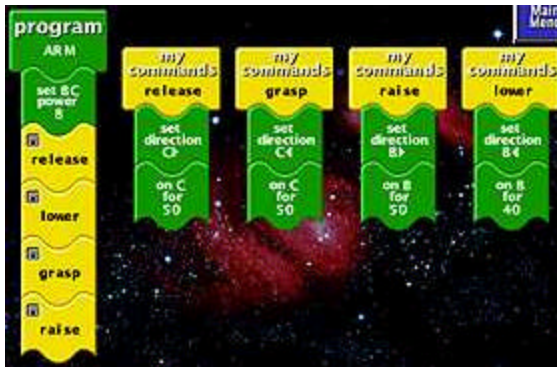
Reference

Reference the ideas, theories, figures or quotes that you take from other sources. Listing of references should follow the format described in "Referencing your work".

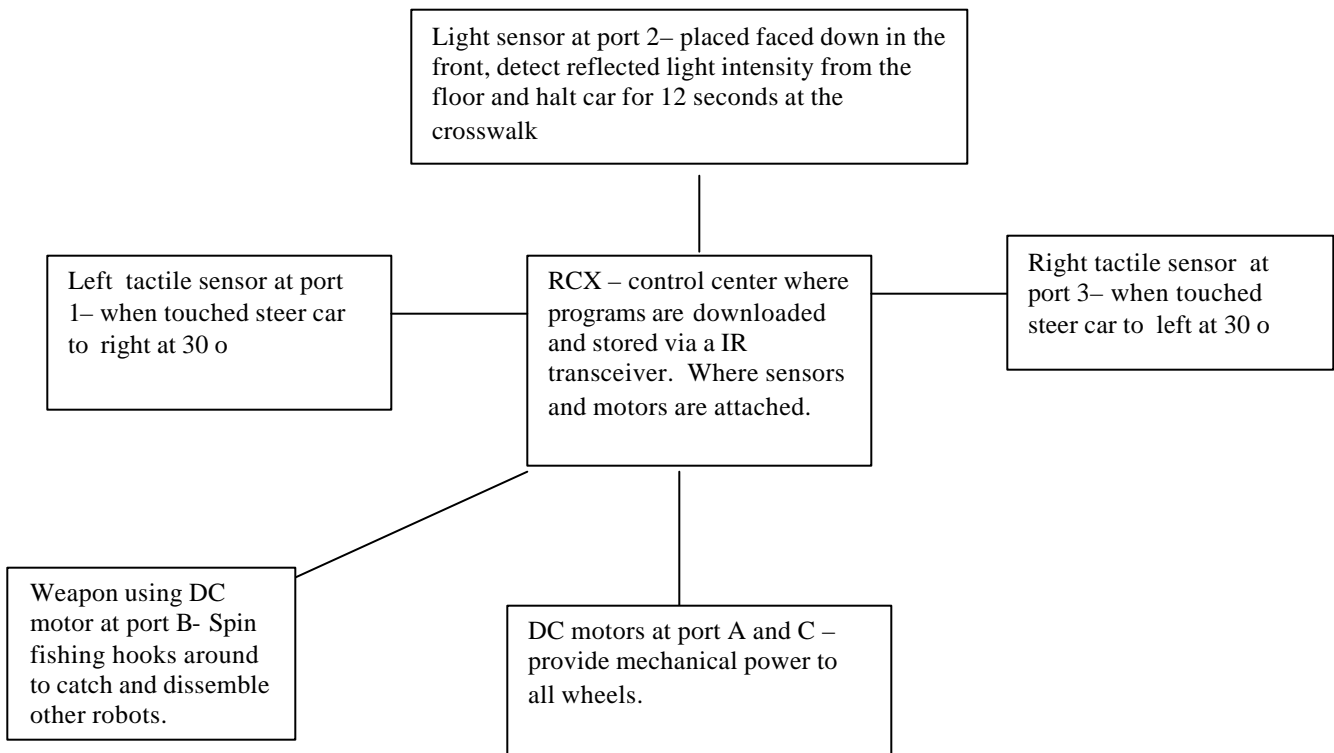
Appendix

Include a copy of your spreadsheet, and anything else you think is appropriate (but you do not want to clutter your report with). Here you can include the design drawings of the vehicle and the secret weapon. You can also include the program you wrote for the RCX and a drawing of the system layout. The last pages of the appendix should be a brief, individual, signed paragraph from each team member that states that member's specific contribution(s) to the overall effort, including analysis, testing, and writing.

Example of A RCX Program



Example of System Layout:



Assignment #12: Final Design Project Report

Evaluation Table

Category	Possible	SCORE
Report:	--	--
Introduction		
Design Analysis	10	
Prototype description	10	
Performance Results and Discussion	10	
Conclusion	10	
Appendix and Reference	10	
Grammar and Spelling	10	
Graphics and plots	10	
Participation	10	
Turned in on time	10	
TOTAL	100	