Robot Final Report

Due Friday of Finals week

Your team is responsible for composing a single group report that describes in detail your robot design. The audience of this report is the instructor/TA. The tone should be formal.

The two main purposes for writing this report are (1) to document your robot design and (2) to demonstrate improved report writing skills (compared to the Rube Goldberg report). Grading will be stricter than your first report (the Rube Goldberg final report), so please be sure to use correct report format, edit unclear/wordy text, and proofread!

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.)**

Report Format

The technical report should be a professional document. Graphs, tables, and drawings should be used to clarify the text. The three main parts of a technical report are shown below in Figure 1:

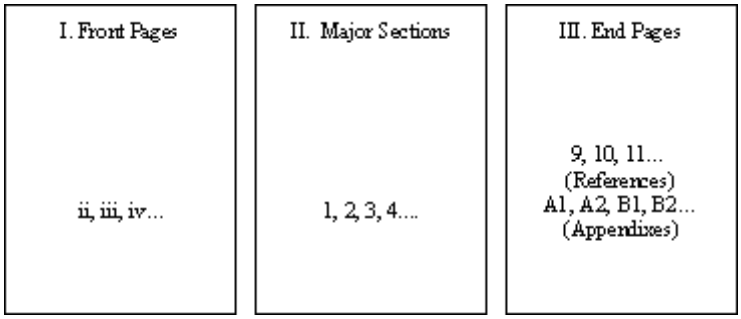

Figure 1. Three Main Sections of a Final Report

I. FRONT PAGES

The front pages include the Cover Page, Table of Contents, List of Figures, and List of Tables. The page numbers are Roman (e.g., i, ii, iii, etc.) and there are no numbers on the cover page (although it is considered the first page).

Cover Page

The first page of the technical report should be unnumbered and includes:

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

Each item should be centered and separated by enough space to fill the whole page and give the cover page a good appearance.

Table of Contents

This is a listing of the major sections in the report and the page numbers on which they begin. The table of contents does not list itself but includes the page numbers of the pages that appear in the front of the report, major sections, and appendixes.

List of Figures

This is a list of all of the figures in your report and the page numbers on which they are found. Do not include this section unless you have at least three figures in your report.

List of Tables

This is a list of all of the tables in your report and the page numbers on which they are found. Do not include this section unless you have at least three tables in your report.

The following is a sample of the front pages (Figure 2):

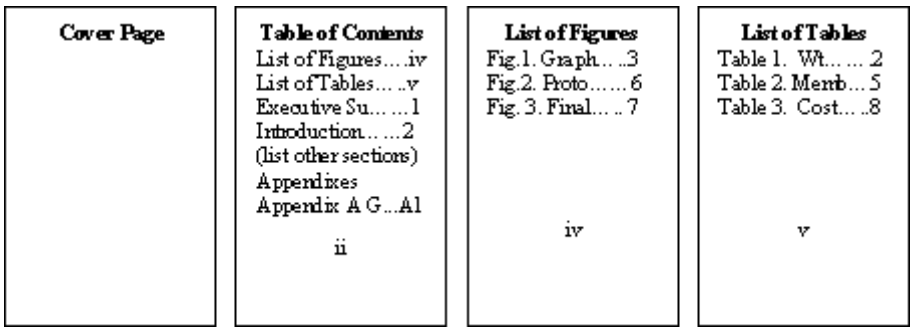

Figure 2. Sample Front Pages

II. MAJOR SECTIONS

This is the main part of the report. The page numbers begin with one and are numbered in Arabic (e.g., 1, 2, 3, 4, etc.). After the executive summary, each major section should be numbered and titled as shown in Figure 3 below:

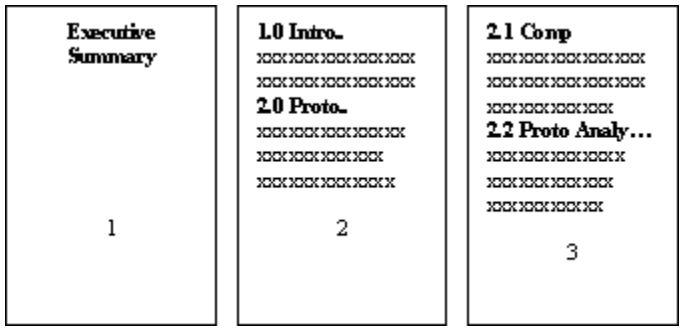

Figure 3. Sample Major Sections

For the major sections of the report, use the following organization and headings:

1.0 Introduction:

This section outlines the parameters of the project, or in other words, the problem definition. Additionally, it addresses the project purpose and what you hope to accomplish. After reading this section, the reader should know in broad terms what your team was trying to do and your goals. At the end, briefly outline how the report is organized (e.g. "In this report, the following sections will be discussed…).

2.0 Robot Construction

This section presents details on the robot body design. Start with an introductory paragraph that describes the robot body in general. Use a multi-view layout (pictures or drawings), as shown in Figure 1, to illustrate the robot shape and size. Use subheadings to describe the main features of the robot (for example, 3.1 Gearing, 3.2 Bumpers, 3.3 Restraint Device, 3.4 etc).

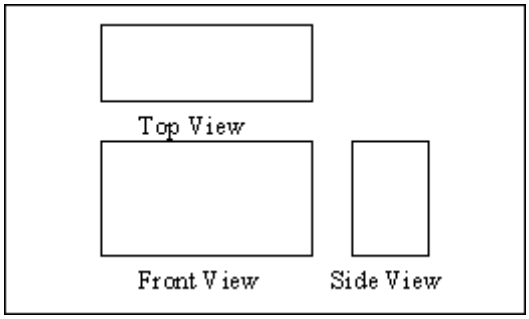

Figure 4. Multi-view Layout

3.0 Design Specification

This section outlines the programs written for your robot. The subheadings should be 3.1 Robotic Wheelchair, 3.2 Car and 3.3 Defender Robot. Before each sample of RCX code, write several sentences explaining what the program does and the logic. These initial comments will help the reader more easily decipher the code. Then include a figure showing the program (for NQC code, include a print out of the code in the appendix). You may include arrows and text boxes to further explain the program. The code must be readable, so use multiple screenshots if necessary.

4.0 Design Process

Explain the process your team went through to come up with the final design. Most likely you built and programmed multiple robots before you found a working solution. Trace through the history of your design process by describing each robot you built, what was wrong with it, and how you fixed the problems (construction or programming) with the redesign. Be careful to not repeat the same information in section 2.0.

5.0 Performance Results and Discussion

This section briefly presents the results of your robot in the competition (pts = score). Was the outcome of the competition more or less as you expected? What caused the machine to fail or succeed? Was the failure due to the hardware or software design? Even if you have negative information to report, the writing should be confident. You can mention that recommendations will follow, but be careful not to make recommendations in this section.

6.0 Conclusion

This section should be a brief, bottom-line summary. It needs to explain how your robot met the design criteria and team goals outlined in the introduction (general, no specifics). Do not bring anything new into a conclusion section; instead restate the key points from the body of the report.

7.0 Recommendations

With the new information you have acquired from the competition, how would you change your design if you have to do it over? Remember to provide justification for each recommendation. Concentrate on the recommended changes of things didn't work.

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”.

Appendices

Include any supplemental information that doesn't fit in the major sections of the report. Some examples are listed below:

- NQC code (optional)
- Additional drawings of the vehicle or secret weapons (optional)
- Other

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. Use the following file for evaluations: http://courses.washington.edu/engr100/Section_Wei/rube_goldberg/RubeEval.doc

Grading

The grading of the assignment will follow the evaluation table given below:

Evaluation Criteria	**Pts**	**Score**	**Comments**
Format	15		Is the report format correct and professional? Are there any mistakes in the tables and figures? Are the tables and figures labeled correctly and referred to by name in the text?
Introduction	10		Is the most important report information highlighted in the executive summary? Does the introduction describe a clear report purpose?
Content	35		Clear, Concise, Correct
Robot Construction	10		Design Specification, Design Process, Performance
Conclusion	5		
Transitions	5		
Writing Style	20		Is the report carefully proofread (minimal errors in spelling, grammar, punctuation, etc.)? Is the writing concise and tone formal?
TOTAL	100		