CE 160 and ELC 152
First Semester, 2005 - 2006

Final Project Evaluation
Draft as of September 9, 2005

This document describes grading procedures and protocols for the final project evaluation.

1. Point Distribution

100 points shall be assigned for the Final Project Evaluation Grade as follows:

G1: completeness of project implementation	10 pts
G2: modularity of project implementation	10 pts
G3: efficiency of project implementation	10 pts
G4: overall quality of project implementation	10 pts
G5: completeness of documentation	10 pts
G6: quality of documentation	10 pts
G7: testing and verification	10 pts
G8: documentation of testing and verification	10 pts
G9: quality of html documentation	10 pts
G10: oral examination	10 pts

These 10 areas are not mutually exclusive. Specific deficiencies may be covered by several areas and penalized more than once. G1 affects all other areas. A failing score in G1 (less than 5 out of 10) automatically means a score of 0 in all other areas. A passing score in G1 sets a cap on the scores in other areas. Scores in the other areas shall be scaled by (G1/10) and rounded up.

Penalty points may also be applied to the Final Project Evaluation Grade if a project is submitted late, or if resubmission of project documentation is required.

2. Evaluation Process

All projects and project documentation are due on Monday of finals week. Students sign up for project evaluation when they submit their project. In preparation for the project evaluation, the instructor goes through submitted documentation and takes note of various aspects of the documentation.

The evaluation process may vary from project to project.

In general, the project evaluation would start with a demonstration of the project, so as to establish if the project implementation is complete. The project is also verified to have been done using appropriate opensource tools.

If the project appears to be insufficient, students are informed of the assessment and its consequences. The nature of the perceived deficiency may be examined further before a final decision is made.

If the project appears to be sufficient, other aspects of the project and its documentation are examined. Questions are asked as the evaluation proceeds. These may be addressed to the group as a whole or to specific members of the project group.

The instructor notes all deficiencies as the evaluations proceed. The group is informed of the most likely assessment at the end of the evaluation, and notes any comments or objections the project group might raise against the assessment.

The instructor reviews the evaluation on his own after the evaluation session, then assigns a Final Project Evaluation Grade for each project group member.

3. Grading

3.1. Completeness of Project Implementation

G1: completeness of project implementation 10 pts

This score is based on whether the goals of the project have been met. If the main goals of the project have not been met, a failing score in the range [0,4] is given. If all the goals of the project have been met fully, a score of 10 is given. A score in the range [5,9] is given if the goals are met, but not completely. This may happen, for instance, if a piece of software developed works only in special cases.

The completeness of the project is very important to the rest of the evaluation process.

If the project is deemed insufficient, so that the score for G1 is less than 5, then the scores in all other areas are automatically 0. In this case, the Final Project Evaluation Grade is at most 4 out of 100. When combined with points earned for the project proposal formulation, progress reports, project presentation and pre-final project evaluation, this would imply a Final Project Grade of at most 42.4 out of 100. This means a failing grade for the project, and in some instances a failing grade in the course. In this situation, students may opt for a grade of INC in the course, or agree not to given a final grade, so that they may have more time to address the deficiency. In this case, the Final Project Evaluation Grade is again evaluated when the students resubmit the project. However, all penalty points already assigned, if any, would still apply, and since this would be a late project, the actual Final Project Evaluation Grade is obtained by scaling the resulting Final Project Evaluation Grade by 0.8 and rounding up to an integer. For instance if the result of the evaluation is a Final Project Evaluation Grade of 100, what will actually be recorded is 0.8 * 100 or 80.

If G1 is in the range [5,9], the scores in the other areas are scaled by (G1/10) and rounded up. For instance, if G2 is 6 and G1 is 7, then the actual score recorded for G2 would be 5, obtained by scaling G2 by (G1/10) yielding 6 * (7/10) which is 4.2, then rounding up to 5.

3.2. Modularity of Project Implementation

G2: modularity of project implementation 10 pts

This score is a measure of how systematically the project was implemented.

0: project is implemented correctly

10: project is implemented correctly and very systematically

For the software part of projects, the following are some indicators of modularity:

* systematic implementation of software in multiple source files
* avoidance of global variables
* generality and reusability of functions
* appropriate passing of parameters

For hardware, modularity is indicated by the specification of appropriate hardware modules will well-defined interfaces.

3.3. Efficiency of Project Implementation

G3: efficiency of project implementation 10 pts

This score is a measure of how efficiently the project was implemented.

0: project is implemented correctly

10: project is implemented correctly and very efficiently

Is the program source code for software as short as possible?
Does software developed execute as fast as possible?
Is memory used efficiently by developed software?
Does the project implementation make appropriate tradeoffs?

3.4. Overall Quality of Project Implementation

G4: overall quality of project implementation 10 pts

Some points that might be considered:

Was the project implementation modular?
Was the project implementation efficient?
Does software have a good user interface?
Is program code written so as to be easily understood? Do variable names contribute to understanding of the program code? Are variable names in English?
Is the project useful?

3.5. Completeness of Documentation

G5: completeness of documentation 10 pts

This score measures the availability of all documentation needed to understand the project. Answers given by project group members regarding technical aspects of the project should all be found in the documentation.

This score will also serve as a cap on G6 measuring quality of documentation.

3.6. Quality of Documentation

G6: quality of documentation 10 pts

This scores measures how well-written and well-organized the documentation is. This score also tries to assess whether a student trying to understand the project will actually find the documentation useful.

The actual score recorded as G6 will be the score that results scaled by (G5/10) and rounded up.

3.7. Testing and Verification

G7: testing and verification 10 pts

This score tries to assess how systematically and comprehensively the project and its components have been tested.

This score will also serve as a cap on G8 measuring documentation of testing and verification.

3.8. Documentation of Testing and Verification

G8: documentation of testing and verification 10 pts

This score assesses whether all tests made were actually documented.

The actual score recorded as G8 will be the score that results scaled by (G7/10) and rounded up.

3.9. Quality of HTML Documentation

G9: quality of html documentation 10 pts

Does the HTML documentation include all information found in the bound documentation?

Does the HTML documentation provide a hyperlinked Table of Contents with links to the appropriate sections?

Is there a link to the Table of Contents from various parts of the HTML documentation?

Are there helpful "previous" and "next" links allowing the HTML documentation to be browsed systematically?

Are there appropriate links in various sections of the HTML documentation to other sections being referred to, and to online resources being referred to?

Did the project group take advantage of the HTML documentation to include information and data that are difficult to include in the bound documentation?

Is the HTML documentation well-organized and aesthetically pleasing?

3.10. Oral Examination

G10: oral examination 10 pts

This score assesses the ability of individual project group members to speak about various aspects of the project. Group members may be given different scores.

4. Formula

Given the G_i for i = 1..10, the Final Project Evaluation Grade may be obtained as follows:

If G1 < 5, Final Project Evaluation Grade = G1
otherwise
Final Project Evaluation Grade = G1 +

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                                    CEIL( (G1/10) * (   G2 + G3 + G4 +
                                                        G5 + CEIL((G5/10)*G6) +
                                                        G7 + CEIL((G7/10)*G8) +
                                                        G9 + G10
                                                    )
                                )
```

where CEIL(x) is the unique integer in the semiclosed range [x,x+1).