Project Part 2: Design

Due: Friday March 15, 2013 at 5:00 pm (single PDF file named P2_T**)
Points: 100
Weight: 10% of the course grade

A. Deliverables of Part 2 of the Project

In the following <T3> denotes a team of three students and <T4> denotes a team of four. Also, the notation <X/Y> means X applies to a <T3> and Y to a <T4>.

For this part of the project you should provide a Design Document (DD) with the following structure:

0 Table of contents

1 Abstract: a revised version of your project’s abstract (100 to 150 words).

2 Introduction: a general description (between 300 to 500 words) that briefly re-states the goals of your project and gives a concise account of progress made since the previous report (concept and specification). Indicate changes in the project, refinements, and current status.

3 High-level and medium-level design: present the project in terms of high level architecture, subsystems, and program units. Given the diversity of projects, there is some flexibility here. In any case, you should include, with accompanying textual descriptions, the following (a, b, c):

   (a) At least one high-level diagram following the example provided by the layered architecture pattern described in Chapter 19 of the CS 426 textbook (see also Lecture 22, CS 425 Fall 2012). Use UML symbols for subsystems, components, and interfaces to draw such diagram(s). Include also a textual description of the diagram.

   (b) The structuring of your software in program units. In the case of object-oriented solutions, the classes are examples of such program units, hence a design class diagram (in UML notation) with details of attributes, operations, relationships, and multiplicity constraints should be provided (at least 10 classes are expected). Briefly describe the role of each class as well as the methods included in the classes (in total, at least <20/25> methods should be described). In non-object oriented solutions, program units can be modules, functions, procedures, subroutines, etc. Show the organization (hierarchical or not) of these units (at least <20/25> units are expected) and provide for each of them: name, description, the higher level unit (e.g., subsystem) to which the program unit belongs, its input, its output, program units called by this unit, its exceptions or interrupts, and any additional comments that could enhance the description of the unit.

   (c) The major data structures used in your project – you can choose any type of data description that is suitable for your design. If database tables are used, for each table you should indicate
its fields (columns) and its primary key(s). For example, a table containing information on employees may look like the following (in this case the primary key, shown in bold, is SSN):

<table>
<thead>
<tr>
<th>SSN</th>
<th>Last Name</th>
<th>First Name</th>
<th>Position</th>
<th>Department</th>
<th>Office</th>
<th>Telephone</th>
<th>Email</th>
</tr>
</thead>
</table>

4 **Detailed design**: include several details on the low-level design of your software. Teams <T3> should provide a total of 6 fairly complex (non-trivial) examples of detailed design, while teams <T4> should provide 8 such items. At least two of detailed design indicated below should be illustrated:

- Pseudo-code
- Activity diagrams (in UML notation)
- State machines (in UML notation)
- Sequence diagrams (in UML notation)

5 **User interface design**: provide at least 9 (for <T3>) or at least 12 (for <T4>) nontrivial snapshots of the user interface, with accompanying descriptions. In these snapshots, details of the user interface (e.g., panels, toolbars, menus, menu items, buttons, textboxes, etc.) should be presented, and the formats used in output displays, results, reports, and/or statistics should be shown. One or two sample messages to the user could also be provided (but this is not required).

6 **Annotated references**: describe how the project references (a problem-domain book and the <4/6> reference articles) relate to your project. The description for each reference should be between 100 and 150 words.

7 **Glossary updates**: Include here at least <6/8> new additions to the project glossary that you wrote for the first part of the project.

8 **Contributions of team members**: Indicate the specific work done by each team member on this part of the project.

**Grading**: Section 3: 30%, Section 4 25%, Section 5 25%, formatting & all other sections: 20%