

CS 426 - Senior Projects in Computer Science

Project Part 3: Design

March 5, 2016

Due: Wednesday, March 16, 2016 @ 8:00 pm. Single PDF file named [P3_T##.pdf](#) or [P3_LastName.pdf](#), sent by email to the instructor at dascalus@cse.unr.edu

Points: 100

Weight in course grade: **Team option:** 9% **Individual work option:** 12%

In the following <T1> denotes individual work option (one student), <T3> denotes a team of three students, and <T4> denotes a team of four students. Also, the notation <X/Y/Z> means that X applies to <T1>, Y to a <T3>, and Z to a <T4>.

A. Team Option

1. Cover page

- Department, University
- Project title
- [Team name,] team members
- Instructor
- External advisor(s) and their affiliation(s)
- Date

2. **Abstract** (100 to 150 words). Concisely and clearly indicate what your project is about, why it is important, and what software (and, when applicable, hardware) you intend to develop and demonstrate. You may reuse text from previous project parts, but try to refine the abstract as much as possible. Also, try to minimize the use of future tense in the abstract.

3. **Introduction** (200 to 400 words). Provide a description that briefly re-states the goals of your project and gives a concise account of progress made since the previous project report (P2). Indicate changes in the project, and the reasons for these changes. If applicable, describe project development challenges and how you are addressing these challenges.

4. Design Model

Present your project's design model in terms of high-level architecture, class diagram(s), program units, and detailed design. Include, with *accompanying textual descriptions*, the following:

4.1 Architectural Design. Include here:

- A *high-level structural diagram*, for example a diagram similar to the layered architecture pattern described in Chapter 19 of the CS 426 textbook. Use UML symbols for *subsystems*, *components*, and *interfaces* to draw such diagram. This diagram should include at least <2/3/4> subsystems.
- A *high-level behavioral diagram* of your system (an activity diagram or a state chart), showing how your system's use cases are interconnected.

4.2 Class diagrams. Based on the high level structural diagram presented in Section 4.1, include *one or more design class diagrams* that represent (make up) all the subsystems included in your system's architecture. If (part of) your solution is not object-oriented, include its corresponding *hierarchical module diagram(s)*. In total, there should be at least **<10/15/20>** design classes and/or modules.

4.3 Program units. Present here details of your *program units*.

In object-oriented solutions *classes* are such program units, while in non-object oriented solutions program units can be modules, functions, procedures, or subroutines.

Briefly describe the role of each class or module included in the diagram(s) presented in Section 4.2, and provide details of their more important methods or functions. In total, provide details of at least **<12/30/40>** methods or functions. For each method or function, details consist of name, brief description, author(s), input, output, exceptions, etc.

4.4 Detailed design. Present at least **<2/3/4>** activity diagrams, flowcharts, or state-charts that describe in detail some of the more important components of your system's behavior (methods, functions, procedures, or algorithms).

5 Data Design

Using tables or lists provide details of your system's data organization. Briefly explain the meaning and purpose of your project's data structures.

6 User Interface Design

Provide at least **<3/9/12>** representative snapshots of your system's user interface, with accompanying descriptions. In these snapshots, the main user interface components with details (e.g., panels, toolbars, menus, menu items, buttons, textboxes, etc.) should be presented, and the format used in output displays, results, or reports should be shown.

7 [Hardware Design – only if applicable]

If applicable, include:

- A high-level diagram showing the organization of the hardware components of your system (main components and their interconnections).
- A list of potential components with brief descriptions of their roles. Include snapshots (photos, figures, or diagrams) of components likely to be used. Indicate the sources of the snapshots.

8 Glossary of terms

Include new additions to the project glossary created for the previous part of the project (P2).

9 References

Provide references for a *problem-domain book* and at least **<2/4/6>** related *scientific articles*. The articles should be relevant *journal papers*, *conference papers*, and/or online *technical reports*. For the problem-domain book and each article provide a description between 80 and 120 words.

10 Contributions of Team Members

Indicate how much time each team member worked on this project part (P3), and on which specific activities.

B Individual Work Option

You are asked to complete the following items:

- 1 – Cover Page
- 2 – Abstract
- 3 – Introduction
- 4 – Design Model
- 6 – User Interface Design
- 7 – Hardware Design [only if applicable]
- 9 -- References

as described in Section A above.