CSCE 156 – Design Document

To be successful in their careers, computer science and engineering graduates need, in addition to in-depth technical knowledge, the ability to communicate and collaborate with a variety of audiences. To achieve this goal, it is important that students have instruction and practice in computational thinking and in communication skills throughout their curriculum. To this end, in addition to the technical artifacts (code and archive files, test cases, etc.) you are required to iteratively draft a technical design document to detail various aspects of the design of your application.

The design document is a *living document*; it is expected that you will modify, update and improve this document through each phase of this project.   This is a *technical document*, not an essay or an article or a personal account. The tone should be professional and the writing should be formal.

The format of this document should follow the IEEE Standard for Software Design Description documents as described in IEEE Standard 1016-2009. The standard gives a general outline for your document and provides details for specific instances of this document. A copy of the standards document has been provided for you. We have also provided you with a simplified template which you can and should use as a basis and guide to write your design document.

The Design Document has several purposes. It is intended to give you experience in technical writing and design. It is also a mechanism by which you are encouraged to think and plan an initial design prior to implementation so that development is faster and you can identify and resolve potential problems. To that end, the design document draft will be **due 1 week prior to the actual assignment due date**. In each phase (each subsequent assignment) you will update the design document, incorporating new aspects or features as you go as well as improving and correcting mistakes in prior iterations of the document.

Evaluation

Each iteration of the design document will be evaluated and we will give appropriate feedback along with a "grade estimate". However, only the final version of your design document will count toward your final grade giving you a chance to improve your document. Late document submissions will not be evaluated and you cannot use any late passes for your design document.

Overall the Design Document should be **clear and comprehensive enough that a reasonably technically competent person could reproduce your system design (though not necessarily every detail) with identical functionality without access to your actual code base**. Our overall evaluation will be based on how well your Design Document achieves this principle. In addition, we will also evaluate your technical writing skills by evaluating the following items. Note that this is not an exhaustive list. We will likely identify and add new items as the project progresses.

- Document must follow the basic template provided (IEEE 1016-2009)
- Must be well-written and well-structured

- Must be free of spelling and grammar errors
- It should have a complete table of contents along with page numbers
- Should not be overly verbose nor overly terse
- Proper visual summaries are used (tables, lists, figures, etc.)
- It should discuss the design, execution, and results of testing strategies for each component as well as any design or implementation changes that were made as a result of testing outcomes
- It should be an advocate for the various design choices; describe key advantages (or avoided disadvantages)
- The design description should accurately reflect the other artifacts (code, DDL files, etc.)
- It should be a technical document: it should not be a personal account, should not be written in the first person, and should not be written in the context of an assignment (that is, it should be treated as a real project)
- The overview section should provide an overview on the scope of the project, a statement of the problem being solved, and the overall functionality that the end product will provide. Other functionality may be discussed but may be treated as "beyond the scope of this design" (or as functionality to be provided in a companion subsystem).

Bonus points will be awarded based on the following:
- Inclusion of at least 1 UML diagram detailing class relations (5pts) (you may find the Eclipse plugin Object Aid UML or other UML plugin useful; plugins are available through the Eclipse Marketplace)
- Inclusion of at least 1 Entity-Relation diagram detailing the database schema (5pts) (you may find MySQL Workbench to be useful in generating ER diagrams)

In addition, recall the following expectations regarding your design document:
- Each Design Document revision is due 1 week prior to each phase (assignment). Failure to turn in the document will result in no evaluation of it
- Each revision is evaluated and a grade estimate is provided. You are expected to make updates, corrections and revisions to improve the document in response to our feedback and to include new elements at each phase of the project
- Only the final revision's grade will count toward your final grade
- The final Design Document is equivalent to a 100 point assignment.

Common Errors
- The template provided has the basic structure that you should follow, but it has many *placeholders*. You should *not* leave these placeholders in your document; you should be replacing them with your own content.
- Do not use personal pronouns or past/future tense. Use third person and present tense only.
- The Design Document should be written toward another technically competent developer or manager, *not* toward a TA, the instructor or in the context of a class assignment.

Resources

- We have provided a Word 2007 template for you to use. You may use other word processing applications if you wish, but it should still follow this template.
- We have provided the IEEE 1016-2009 Design Document standard.
- We have provided a real-world example of a design document from a company named Deloitte. You should use this as a reference for what a real design document looks like. However, not every section may be applicable to your document. There may also be sections that you should include in your document that are not in this one.
- We have provided several examples of the better design documents from other students. These examples are certainly not complete and should not be considered the "gold standard". You should aim for even better quality in your document.

Rubric

Points are distributed and awarded according to the following general rubric. The "other" section is reserved for items not specifically enumerated in this document but that will allow the graders to identify other problems.

Item	Points	Score
Forematter (title, abstract, revision history, table of contents)	10	
Formatting (IEEE standard, page numbers, etc.)	5	
Spelling, grammar, tone	10	
Content		
Introduction	10	
Overall Design Description	10	
Database section	10	
Class Design section	10	
Database Connectivity section	10	
Data Structure section	10	
Bibliography	5	
Other	10	
Bonus	(10)	
Total	100	