

University of Toronto

Department of Computer Science

CSC340S - Information Systems Analysis and Design

March 15, 2004

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Assignment 3: Detailed Design for an Information System

Due Date: 5:00pm Thursday April 8, 2004

This assignment counts for 20% of the final grade

This assignment is to be undertaken by students working in teams of three. Teams of two will be allowed when no third member is available.

The Assignment

The objective of the assignment is to give you practice in doing a detailed design for the information system you have been working on for assignments 1 and 2. The detailed design should include selecting hardware, networking and software for the new system, designing a system and a general software architecture, proposing a detailed software architecture, also defining a relational database schema and suitable I/O procedures and interfaces.

Directions: This assignment consists of eight steps:

1. Adopt the requirements specification of assignment 2. You may want to revise it on the basis of the comments you received from the marker.
2. Define a system architecture, consisting of computer networks (existing or new), hardware (existing or new) and software platform (operating system, other commercial software you will be using for your system).
3. Select hardware, software and networking to be purchased for the new system. Specify clearly the criteria and alternatives you are using for your decision.
4. Propose a general software architecture for the new system and justify your choice.
5. Based on the general design you have proposed, design the database schema for the database component of your system. Take into account workloads in proposing a relational database schema. Use both class diagrams and ER diagrams to describe the contents of your database before you generate a relational schema.
6. Design I/O procedures and user interfaces.
7. Do a detailed design of the classes that are part of your system using class, interaction and state diagrams.
8. Write a report that describes the complete system design. The report should include as an appendix the requirements specification document on which your design was based, along with a careful account of how all requirements (functional and non-functional) were addressed in your proposed design.

What to Hand In

Please submit your assignment in hardcopy form to the instructor's office on Thursday April 8, by 5pm.

There is no limit on the length of the report that you have to hand in. It is suggested however, that you turn in a report of reasonable length, sufficient to convince the marker that you have done a good job, without boring him/her.

CSC340S Asst3 – Information System Design

Detailed Marking Scheme

Marker:

Team: _____

Total Marks: _____/101

Marks for this assignment depend on the factors listed below.

A: System Architecture (20%).

Description and justification of the hardware, networking and software platform selected for the design; also, description and justification of the software architecture adopted.

Value 20

marks: _____

- Specification of computer network (existing or new, if any)
() worst in my pile () somewhere in the middle () top
- Specification of the hardware (existing or new)
() worst in my pile () somewhere in the middle () top
- Specification of the software platform (operating system and other commercial software you will be using for your system)
() worst in my pile () somewhere in the middle () top
- Specification of general software architecture; e.g., client-server, MVC, layered, etc
() worst in my pile () somewhere in the middle () top
- Identification of sub-systems and major components
() worst in my pile () somewhere in the middle () top
- Justification that the overall design meets all requirements
() worst in my pile () somewhere in the middle () top

B: Program Design (21%).

A description of the detailed design of the application component of the system, given in terms of class, sequence, and state diagrams.

Value: 21

marks: _____

B1. Class Diagrams (7%)

Value: 7

marks: _____

- Description of class diagrams, including a data dictionary.
() worst in my pile () somewhere in the middle () top
- Quality of the diagrams
() Little understanding of class diagrams.
() Some understanding, but there are flaws or omissions.
() Reasonable diagrams, but not enough to capture the design of the application and/or there is missing information from some diagrams, e.g., attributes, operations, multiplicities
() Good and complete diagrams, cover well the design
() Excellent work
- Justification that the design meets relevant requirements
() worst in my pile () somewhere in the middle () top

B2. Sequence Diagrams (7%)

Value: 7

marks: _____

- (Informal) Description of sequence diagrams.
() worst in my pile () somewhere in the middle () top
- Quality of the diagrams
() Little understanding of sequence diagrams.
() Some understanding, but there are flaws or omissions.
() Reasonable diagrams, but not enough to capture the design of the application and/or there is missing information from some diagrams, e.g., conditional branching or terminations
() Good and complete diagrams, cover well the design
() Excellent work
- Justification that the design meets relevant requirements
() worst in my pile () somewhere in the middle () top

B3. State Diagrams (7%)

Value: 7

marks: _____

- (Informal) Description of state diagrams.
() worst in my pile () somewhere in the middle () top
- Quality of the diagrams
() Little understanding of state diagrams.
() Some understanding, but there are flaws or omissions.

() Reasonable diagrams, but not enough to capture the design of the application and/or there is missing information from some diagrams, e.g., events, conditions and actions for various transitions

() Good and complete diagrams, cover well the design

() Excellent work

- Justification that the design meets relevant requirements

() worst in my pile () somewhere in the middle () top

C. Database Diagrams (20%)

Value: 20

marks: _____

- Class and ER diagrams describing all data to be stored in the database, along with identifiers and other constraints

() worst in my pile () somewhere in the middle () top

- Workload data (expected number of instances for different classes, frequency of most important operations)

() worst in my pile () somewhere in the middle () top

- Restructuring of the ER diagram

() worst in my pile () somewhere in the middle () top

- Generation of the relational schema

() worst in my pile () somewhere in the middle () top

- Normalization of the schema

() worst in my pile () somewhere in the middle () top

- Justification that the design meets relevant requirements

() worst in my pile () somewhere in the middle () top

D. User Interface Design (20%).

Covers the design of all user interfaces to be supported by your system.

Value: 20%

marks: _____

- Clear description of the different user groups

() worst in my pile () somewhere in the middle () top

- State diagrams describing the dialogues supported by the interface

() worst in my pile () somewhere in the middle () top

- Mockups of windows

() worst in my pile () somewhere in the middle () top

- Website design (if relevant)

- () worst in my pile () somewhere in the middle () top
- Input/Output design
() worst in my pile () somewhere in the middle () top
 - Justification that the interface design meets relevant requirements
() worst in my pile () somewhere in the middle () top

E. Supporting Documentation (10%).

Supporting documentation for the selections you made for hardware, software and networking (eg, prices, configurations, vendors considered,...), meetings with your customer (if any), meeting among team members, supporting evidence for some of your design decisions,...

Value: 10

marks: _____

F. Presentation (10%)

The style of your presentation, including language, grammar, clarity, organization of appendices, etc.

Value: 10

marks: _____

F1. Language: Grammar, spelling,...n

() worst in my pile () somewhere in the middle () top

Value: 5

marks: _____

F2. Style and structure: E.g., table of contents, proper title page, page numbers, introduction, conclusions, etc.)

Value: 5

marks: _____