CS3773 Project I

For this project, you will write a complete Software Requirements Specification (SRS) for the Electronic Medical Information System (EMIS). You will work in groups of size four to six.

**Deliverables**

In the SRS, you shall include a table of contents, a table of figures and tables, an introduction (Section 1), a brief description of the EMIS (Section 2), and the complete specification of the system (Section 3). You shall include the following models, tables, and associated descriptions to express the requirements of the software system in Section 3. You are required to use a Computer Aided Software Engineering (CASE) tool for UML to build all your UML diagrams. You may choose to use UMLet, Violet, Papyrus, or other UML CASE tools. You are expected to learn how to use CASE tools on your own.

- Develop a UML use case diagram, showing all identified use cases, along with a brief description of the use case diagram.
- For each use case, give a detail description in a tabular format to include a use case number, a meaningful use case name, the actors of who initiate and participate in the use case, the pre/post conditions, the related requirements and other use cases, and a normal scenario of the use case and its exceptions and alternative steps (i.e., all possible scenarios).
- For each use case, build a sequence diagram for its normal scenario.
- Build a UML class diagram for the whole system, showing all identified classes and their attributes and operations, all actors, relations, and multiplicities. Include a discussion of the class diagram.
- Build a state diagram for each class that displays interesting behavior. Include a discussion for each state diagram.
- Construct a data dictionary to describe terms that have been used in your diagrams, including classes, attributes, operations, states, events, and activities.
- Draw GUI interfaces, showing screen shots and widgets. Describe the purpose of each screen shot and each widget, and the effect of pressing each widget (showing the navigation among screen shots).
- Develop a functional and nonfunctional requirements table, which includes a requirement number, a requirement name, the pre/post conditions, a brief description, and the related requirements and use cases.

**Hard copies are due in class on March 25, 2012.**
Meetings with Customer

In this project, your TA Edward Turpin (email: eturpin5 AT gmail.com) will serve as your customer/client. As a real-life customer, he may not know or be able to articulate what he really wants. You have to communicate with him and help him decide. You cannot assume your TA knows what a complete SRS looks like. In your SRS you have to convey completely what the customer wants in a way that any software engineers will know what needs to be done without constraining how the program should be implemented.

You have to arrange at least one meeting with your customer before the project due date. The format of these meetings is purely Question & Answer.

1. Every meeting with the customer (TA) must be scheduled at least 48 hours in advance via email.
2. You have to send the customer (TA) a questionnaire 24 hours in advance of the meeting.
3. The length of each meeting is from 30 to 60 minutes.
4. All the group members have to present for the meeting.
5. The customer will provide responses to your questions during the meeting. You have to take notes on paper during the meeting. You should submit a copy of the meeting minutes as an appendix of your SRS.
Electronic Medical Information System (EMIS)

The EMIS is a computer-based system that manages electronic patient records to provide rapid and efficient means to handle medical information of a clinic. Traditionally, a clinic uses paper-based patient records, which are expensive and take up space to maintain. Moreover, filing, retrieval of, and refiling paper patient records are more labor intensive and less efficient compared to the electronic patient records. These problems shall be alleviated by using the EMIS. The overall goal of the EMIS is to provide physicians, nurses, and clinical staff with a powerful, easy-to-use tool that securely assists them in gathering, storing, and manipulating patients’ information. The essential requirements of the EMIS are summarized as below.

The EMIS shall allow patients, including both new and ongoing patients, to enter their information, such as personal information, the insurance-related information, and medical history, at the clinic or at a patient preferred place. To enable a smooth transition from paper medical records to electronic ones, the EMIS shall allow the clinical staff to enter the patients’ information into the new system as well. Additionally, EMIS should be able to handle medical records in a variety of forms, such as images, scanned scripts, and audio recording.

The EMIS shall enable patients to schedule appointments with the doctors at the clinic. Using the EMIS, patients are able to request appointments with the doctors by exchanging messages with receptionists. Also, the EMIS shall send a reminder to a patient 24 hours before the appointment time.

The EMIS shall assist a patient’s office visit, enabling a nurse to enter into the system the patient’s current medical conditions, such as the blood pressure and the weight. A doctor’s diagnosis shall be entered into the patient’s chart.

EMIS shall support financial billing applications, which will collect the co-payments and transmit the appropriate information to the patients’ insurance agencies.

After each visit, a patient shall receive the electronic, itemized receipt of the treatment, which will also be put into the patient’s electronic chart. If a doctor issues drug prescription(s) to a patient, the prescription(s) shall be put into the patient’s chart as well as the order(s) of test(s), such as a blood test and an ultra-sound exam.

As many of the patients records contain sensitive information, the EMIS shall ensure the storage and processing of medical records are regulatory compliant. Upon receiving the test results, the EMIS shall store the test results in the patients chart and send the results to the patient’s doctor for her or him to review. The test results shall be sent to the patients or other people. The use, sharing, and transmission of medical records shall follow the legal regulation HIPAA, which requires more complete, secure, and auditable ways to gather, store, check-out, and transmit medical information.
In summary, the EMIS to-be-built will facilitate a clinic to provide dependable and efficient health care to the patients at reduced cost while respecting the privacy of the patients.