In this project you will design and implement a database application. You will work in groups of two or three students. The project is carried out several main steps:

1. Conceptual design using the E-R model. Specification of some of queries and transactions for your system.

2. Translation of the E-R model into the relational model. Refinement of the design (into at least 3NF schemes, preferably BCNF or 4NF schemas). Complete specification of queries and transactions for your system.

3. Implementation: Creation of database tables, data entry, design and implementation of queries and transactions, and Web-based interface design.

Your final report should contain (1) The final ER design, (2) The final relational design, including listing of all tables (schemas), keys, and data dependencies, (3) Data (current at demo time), (4) Queries and application programs. (5) You should also indicate, for each member of the group, which parts/tasks were implemented by that member.

Each team will demonstrate their project online. All members of the team should be present at the time of demonstration.

Your system should be easy to use. I should be able to check your project by going to the home page of your system.

THE PROBLEM:

We will explore the issues in an electronic medical records system. We will concentrate on two medical systems in this project

- A hospital
- A pharmacy

Each group will choose one of the above systems to implement. We will also discuss issues regarding the integration of various electronic medical systems.
These are some of the queries and transactions your system should provide:

**The Hospital System**

1. Given a patient’s name, list patient’s information. Include date of admission and room number (if still in the hospital), or date of discharge. Allow user to select patient if multiple patients with the same name were found.

2. List all patients currently in the hospital. Include date of admission and room number.

3. Given a doctor’s name, list all patients visited by that doctor with relevant data (date, fee, ...). It should also be possible to specify begin/end dates, and the listing will be for the period specified.

4. Admit a patient to the hospital and assign room/bed. Patient’s information (including insurance information) should be entered at this time.

5. Check out a patient and provide the billing information.

6. Enter information regarding doctors, and visits they make to patients.

7. Enter information regarding rooms, room types, and their prices.

8. Provide a report of average length of stay in hospital by type of disease.

**The Pharmacy System**

1. Given a patient’s name, list patient’s information. Allow user to select patient if multiple patients with the same name were found.

2. Given a medication, provide information regarding availability and price.

3. Given a patient’s name, list all the medication (with date and amount) that was sold to that patient. It should also be possible to specify begin/end dates, and the listing will be for the period specified.

4. Add a patient to the database. Patient’s information (including insurance information) should be entered at this time.

5. Sell medications listed on the prescription to a patient and provide the bill. Note that (1) availability should be checked, (2) available quantities should be updated in the database, (3) prices should reflect insurance discount.

6. Enter information regarding medications into the database. Include price.

7. Update inventory information when medications are received.

8. Provide a report listing medications and for each medication list the average quantity sold to patients for a specified period of time.