Requirements Modeling: Health Care System

Project glossary

HCS – Health Care System

Medical staff – doctors, nurses, medical assistants

Laboratory staff – technicians, laboratory assistants

System – Health Care System

Medical institutions – hospitals, clinics and so forth

SSN – social security number

Patient – person, who needs medical treatment

Medical history – information about previous visits and previous diagnoses

Description the system

The main purpose of proposed project is to allow the medical staff, the laboratory staff and patients to be always connected through this system in the real-time mode. Achieving this goal allows all sides involved in using this project to reach the side back targets which are not considered to be minor at the same time. For example: to decrease waiting time in the medical institutions during the first and following visits; to reduce the possibilities of medical errors; to lower administrative costs, to reduce communication time within the medical institutions.

All mentioned above should be built by dividing the whole system on five subsystems. In spite of this division, all information circulating in the system should be stored in the same database. The first subsystem belongs to the medical assistance and allows entering primary information about patient. This subsystem should not let medical assistants enter the information which belongs to doctors, nurses and laboratory staff. The second subsystem belongs to nurses and allows entering primary medical information such as medical history, results of primary examinations, lists of medication and allergies, and immunization status. This subsystem should also allow nurses making prescriptions which they are authorized to do. The third subsystem belongs to doctors and allows entering all information about health status, health treatment, prescriptions, referrals to necessary tests and so forth. The fourth subsystem belongs to the laboratory staff and allows entering information about tests’ results. The fifth subsystem belongs to patients and allows entering information about desirable appointments and retrieving information about medical prescriptions, diagnoses and further appointments. Also system allows to patients makes initial evaluation prescribed medications.

Raw requirement

System must do following:

* Add and retrieve information about patients.
* Close patient data file for some reason (death, moving etc.)
* Retrieve information about estimated cost of drugs. And their availability in the drugstores.
* Look through medical history, tests’ results and so forth.
* Schedule and reschedule appointments.
* Provide communication between medical institutions and within the same medical institution.

System mustn’t do following:

* Delete information about patients.
* Allow to duplicate the appointment time of different patients to the same staff.
* Allow to duplicate the appointment time of the same patient to different staff.
* Allow to duplicate tests to different medical institutions simultaneously.

It would be nice for the system to do following:

* Connect to the drugstore system, in order to estimate the best cost of drugs and to calculate the cost of drugs for a chosen drugstore.
* Book prescribed drugs online.
* Allow to inform a patient about appointment via e-mail, phone message, call by robot
* Allow a patient to mode appointment’s date with desired doctors without confirmation in the real-time. In this case system shows patient all possible dates and time.
* Voice recognizing system for nurses and doctors for filling in patient files

Functional requirements

Input:

* General information about patients
  + First name
  + Second name
  + Date of birth
  + SSN
  + Insurance information
  + Contact information (address, phone, e-mail)
* Medical information about patients
  + Primary information (illnesses, allergies etc.)
  + Results of the initial examination
  + Anamnesis
  + Diagnosis
  + Prescriptions
  + Tests’ results
  + Referrals to necessary tests
* Related information
  + Date of appointment
  + Tests’ date arrival and departure

Output:

* Display general and medical information about patients (see below)
* Display name of drugstores where drugs can be purchased
* Display estimated cost of prescribed drugs
* Display patient’s medical history and tests’ history
* Display related information (appointment dates, test date)
* Display test results

Process:

* Find information about patients
* Find information about availability of prescribed drugs in drugstores
* Calculate estimated cost of drugs
* Store entered data in database
* Retrieve necessary information from database

Non-functional requirements

Performance:

* System must allow at least 500 users to work simultaneously.
* System is capable to update information in short time interval.
* Work on any computer architecture (Mac, PC)
* Provide the everyday back-up information
* System gets primary information according to some rules (name cannot contain numbers; SSN must have exactly 9 digits etc.)
* System must provide strict checking of entering information.
* Any run-time error during system’s execution is not allowed.

Security:

* Appearing of any subsystem types depends on user’s role in the system (login and password)
* All the queries to the database should be developed with prevention of the sql-injection
* Upper level staff can see information of lower level staff. Otherwise not allowed.
* System should avoid malicious behavior

Requirement associations

* Upper level subsystems cannot be developed before lower level subsystems.
* Medical information about patients cannot be entered before general information
* Test referrals and test results cannot be entered before either general information or medical information
* Estimated cost of drugs cannot be calculate without prescription