Patient Information Management System
PIMS

Team 6

Architectural Design

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1.0   Project Overview

Hospitals must maintain current information on all patients in the hospital as well as those recently released. This information has to be readily available to a number of hospital personnel such as doctors, nurses, office staff, and volunteers. The Patient Information Management System (PIMS) shall have a Graphical User Interface (GUI) that the users interact with, a database holding patient information, and a server allowing access across multiple machines.

2.0   UML Diagrams

Diagrams are too big to add to this document. See attached images

Controller UML Diagram

ControllerUML shows an overview of the controller side. It will control the flow of information between the GUI and the database. CurUser represents the current user, with a more detailed view of its composition coming. Patient represents the current patient whose information is loaded, a more detailed view of it is upcoming as well. PatientSearch will consist of a command to search the database and return a list of patients meeting the search criteria to the GUI. Reports will consist of methods to fetch data and format a text file for several reports and then print them using the PrintDocument system class.

Patient Controller UMLDiagram

PatientDirInfo will consist of the shown attributes and instances of the shown classes: (2) EmergencyContacts, 0 to any number of Visitors, and 1 Location. Getters and setters for the properties will exist.

PatientTreamentInfo will consist of 0 to any number of procedures, PatientPrescInfo and the attributes shown. All properties will have getters and setters as well.

PatientBillingInfo will consist of the billing address, an instance of PatientInsInfo, and any number of BillignLineItems. The Patient class will be made up of a combination of PatientDirInfo, PatientTreatmentInfo, and PatientBillingInfo depending on the type of user that is logged in.

User Controller UML Diagram

User is an interface for the specific user types.   It will show the common attributes and methods that all of the user types share. Doctor, OffStaff, MedStaff, and Volunteer all implement user and then implement their specific methods. CurrentUser will be a user type that is one of the implementations. This will change the patient constructor when it is called by the system .

Database UML Diagram

The database will hold a table to store all the information about the patient, billing, insurance, treatment, prescriptions, staff, locations, and login information. It is in the third normalized form, and will have queries and permissions set to ensure the right people can access only the information their permitted to see. The queries will allow the controller to access the tables that need to be accessed by the different GUI views. The database will have a table for Billing, Patient, Insurance, Location, Treatment, Prescriptions, Location, Staff, and Login information.

The main table is the Patient table which holds all the basic directory information of the Patient such as name, gender, date of birth, address, and has patientID as its primary key. Associated directly with that table is the Billing, Insurance which each also use patientID as a primary and foreign key to connect the two tables. The former holds the billing information of the Patient which could include billing address, charges, due date for charges, etc. The latter table holds the insurance information such as insurance provider, account number, etc. Also directly connected to the Patient table is the Location table which has bedNo as the primary key. This table holds all the units, floors, rooms, and beds in the hospital. Treatment has a dependent relationship to the patient's stay in the hospital. The patientID also serves as a primary and foreign key in this table. Information to be stored here include all the treatment information such as date admitted, reason, doctor's notes, date discharged, etc. the Prescription table is connected to the treatment table and serves to hold all the information about the prescriptions the patient may be taking. Since the patient may be taking multiple prescriptions. Then there is also the Staff table which holds all of the employee names, usernames, position, unit assigned, and staffID as its primary key. Directly associated with the Staff table is the Location table previously discussed, and the Login Table. The Login Table holds the information for username and passwords and has username as the foreign and primary key since every individual will have a unique username.

Administrator State Diagram

Shows how the Administrator can interact with PIMS.

Office Staff State Diagram

Shows how the Office Staff can interact with PIMS.

Volunteer State Diagram

Shows how the Volunteer can interact with PIMS.

Nurse State Diagram

Shows how the Nurse can interact with PIMS.

Doctor State Diagram

Shows how the Doctor can interact with PIMS.