CS 460W Project Deliverable 2
https://github.com/erinmshenk/SoftwareDevProject

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I. INTRODUCTION

A. This document is to provide both a general and in-depth overview of the software being developed. This document is intended for clients in the medical field, specifically hospitals.

B. The product is intended to collect, store, and display patient information. This information will include general information (name, date of birth, address, etc), basic medical records (allergies, medications, vaccine status, etc), and higher-level medical information (x-rays, MRIs, blood tests, etc). This software will be designed with the intent of 4 separate users, 1) registration staff, 2) nurses, 3) physicians, and 4) billing department. Each level will come with different access based on a hierarchy, which means two things.

C. As of now, there are no terms, acronyms, or abbreviations that need explained in the document. "Special attention should be paid to the clarification of terms and concepts from the domain of application."

D. As of now, there are no outside documents referenced in this Software Requirements Specifications.

E. Insert outline of what Section 2 and Section 3 cover.

II. General Description

A. This product is an independent product. The only hardware required is a computer that has an operating system capable of running the program.

B. This system will allow registration staff, nurses, physicians, and billing companies access to the information they need as well as the ability to input information. It will be a seamless way for everyone to access what they need to.

C. The users will be medical professionals, emergency room secretaries, and billing companies. The system will have a simple, user-friendly interface to ensure it is usable by all.

D. There will be security constraints to ensure that patient data is protected. Patient data will only be accessed by necessary personnel such as nurses and physicians. Billing will not have access to any patient's private medical records.

E. We are assuming that for this product the client has access to a common, widely used operating system that the software can run on.

III. Specific Requirements

A. Functional Requirements

- The purpose of this program is to create a working login system for an emergency room. The system should be able to record, store, and manipulate data for four different users. They will consist of a patient(s), the nurse, the doctor, and the billing department. The specific techniques/ requirements to perform this task are any terminal that can support an object – oriented language and a database management system.
- For the inputs/ data received, each user will input/ update different data. For the patient(s), they will input their symptoms, primary physician, health insurance provider, if covid – 19 vaccine was received and what brand of the vaccine, allergies, emergency contact name and number, medical conditions, medications, any substance abuse, address, race/ religion. If pregnant, gender, social security number, blood type, and sexual orientation. These will be classified as string variables. There will be some int variables such as weight, height, age, and date of birth. The nurse will be able to input/ update int variables such as vitals, weight, blood pressure, height and how many nights the patient stayed at the hospital. Some string variables will be if the patient is admitted to the hospital, observation notes, and any pre – treatment given. The doctor will be able to override previous records if needed. The doctor can input if tests are needed and what kind of tests, observation notes, update symptoms, any discharge instructions, prescribe medications, and diagnose the patient. These will be spring variables. The billing department will be working with int and string variables. These will be name, address, cost of any charges, discharge info, and arrival and departure date.
- To process the data received/ anything that involves the system, java will be used to generate a graphical user interface for the user to sign in and input data, and MySQL will be used to store the data inputted by the user. The program should throw an error and tell the user if a variable is input incorrectly.
- For output variables in terms of each user. The patient will be able to view all of their info input to make sure it is correct. The nurse will have her final report that the doctor will use to create/ update their report. The doctor will have their own final report that will be sent to billing. The doctor will also be able to order tests and prescribe treatments to patients. These tests could include:
- Hematological Laboratory -
- Red Blood Cell
- White Blood Cell
- Liver Function Test
- Renal Function Test
- Electrolyte Test

- Radio-logic Laboratory -
- X - ray
- Computed Tomography (CT)
- Magnetic Resonance Image (MRI)
- Urinary Test
- Stool Test
- Prescriptions -
- Injections
- Intramuscular Injection (IM)
- Intravascular Injection (IV)
- Subcutaneous injection (SC)
- P.O (Per Os; Oral Medication)
- Some of the illnesses/ diagnoses and their corresponding medications are listed below:

Diagnosis	Medications
Diabetes	Insulin
Heart Disease	Pravastatin
High blood Pressure	Aspirin
Acid reflux	Omeprazole
pulled/ torn muscles	Tramadol
IBS	Miralax/ Culturelle

B. External Interface Requirements

- All users will open the software to the same sign-in page, including 2 textboxes and a submit button. Depending on the username/password inputted, the user will view the program with different levels of access. All pages after the sign-in will have a "back" button to return to the previous page.
  For the billing department, they will see a text box to search for a patient based on name, case number, or social security number. All patients with matching descriptions will show up, so the user can select their information. This then displays all information that relates to the billing in a table, such as the number of nights stayed, number of XRays taken, and any physician notes for the patient, as well as the cost for each. The billing department then sees a "back" button to return to the home screen.
  The registration staff will see a similar home page, but with the option to add a new patient too. When they search for a patient, they see their past registration information, and can update any outdated information. When they add a patient, they are presented with a series of prompts to fill in to record the new patients information.
  The home page for the nurses is slightly different from the registration staff. Their search option will display the same as the registrar, but with more patient details. There will be an edit button that will let nurses update/fill in certain values. Nurses will have access to an additional text-box that includes any notes for the physician. The main difference between the homepage for a nurse and a registration staff member will be their inability to register a new patient.
  Physicians have the highest level of access. They will have the same setup as a nurse, but with even more access. With an "edit data" button, they will be able to update/override any information the nurse enters, create new data entries containing x-rays, CAT scans, etc, and have a similar textbox located at the bottom containing any physician notes.
- The interface for the code/system will be screen - oriented. Whenever a user interacts with the system (whenever a user inputs data), all of the data will be entered through a GUI, and added to a database management system.
- For the software requirements, java will be used to create the user interface and connect to MySQL to store all data. MySQL is the database software we will use to store data entered by any user. No specific OS will be required, since the program should be able to adapt to any OS. But, the primary OS used for this software should/ will be Windows.
- All computers will be on a local area network (LAN) that is only for hospital computers. They should be connected to the private network via ethernet cables.

C. The system should be connected to all computers the client has. It should be able to handle one user per terminal concurrently. Functions will be called for as soon as information is submitted. If the program is idle for fifteen minutes the user will be logged out and the system will return to the sign in page to ensure that patient data is protected.

D. Design Constraints

- For standard hospital formats and compliances, all data is typically stored in a text format or chart. In terms of how the current program can be adapted to fit this, the data table in MySQL can be dumped/converted into a text file.
- For hardware, data will be typed/ inputted on a tablet which backs up the data onto the emergency room's main server (the database). The doctor and nurse will access the data and change it on their own personal computers.

E. Attributes

- The system will not have to restart for updates. All data will be pushed to the database immediately to ensure data is saved if any hardware issues occur. In the case of software issues, failure of one part of the system should not affect other parts of the system functioning. Failures will be fixed soon after they are reported.
- Each user will only have access to necessary information. In the case of unauthorized access all passwords will be changed immediately and patients whose data may have been compromised will be notified.
- To help handle issues with coupling or to help handle the reference of the same class repeatedly, the program will have to be able to maintain/ or should be designed so a single method can be called multiple times on the same device or different devices.

F. Other than java being used to create a graphical user interface and the database to store all variables being created in MySQL, all of the coding will be done on our personal computers.