2023

Health Record Management System

Checkpoint #	Date Submitted
Checkpoint 1	06/20/2023
Checkpoint 2	06/29/2023

Table of Contents

Project Description

Healthy life is of primary objective for every person. Country has to ensure that each citizen gets right to live a healthy life. The process of keeping medical history of citizen and expanding the sectors of health facility that are of huge demand can be done by government level. Also, the medical history being stored might help in diagnosis of any disease and help health practitioners become efficient.

I am planning to make a Health Record Management System that not only helps government help collect data to plan health budget effectively but allow doctors see history for better diagnosis of diseases. I am also planning to allow doctors to insert prescribed medical procedures and insert prescribed medicines so that it will be easy to claim medical insurances either provided by governmental aids or insurances from private companies. Also, drug store could see prescription and give medicine accordingly.

Use Cases

Use Case Title	Budget Allocation
Actor	Government

Description	Some of the facilities of health services might have caused the bottleneck that has impacted on efficiency of health services. Government can see the demand of certain sector of health facility and allocate its budget to make such services accessible.

Use Case Title	Policy formation
Actor	Government
Description	Government runs campaign as preventive work for different diseases. The database can help scout such diseases that are sucking health systems and are prevented if proper campaigning is done on time. So, governments can use the database as helping tool to form and modify health policies to deliver better health to citizens.

Use Case Title	Better Diagnose
Actor	Medical Practitioners
Description	A medical doctor makes well educated guess based on the test reports he/ she has. The procedure of testing and diagnosis of disease in most cases can be done by looking into the patient history. The availability of database where
	doctors can access medical history will make the process of diagnosis accurate and efficient.

Use Case Title	Claim of insurance
Actor	User/ Patient

Description	The medical bills are often time huge burden on any person. So, they keep insurances and to claim insurances can be a lot of hassle as insurances providers take time to check authenticity of bills provided by patients. The database might help prove authenticity as the prescription of doctors can be shown in government database.

Use Case Title	Prevention of overdose
Actor	Drug Stores
Description	The drugs that need to be regulated and only provided if prescribed by doctors, could be regulated as database allows drugstores to view the prescription by doctors and check if they have been sold to patient already or not. This helps to mitigate overdose of such medicines, and also reduces illegal use of such medicines.

Functional Database Requirement

1. Government

1.1 Government has access to view the data of all users.

1.2 Government shall not edit any of user and professional data

2. User

2.1 A user shall create only one account

2.2 A user shall fill their personal detail and initial medical history

2.3 A user shall see their medical history and prescriptions

2.4 A user shall accept the request of professional before they can update or view medical history

2.5 A user can work with multiple professional

2.6 A user cannot add their medical history and prescription

2.7 A user cannot modify their medical history and prescription by doctors

2.8 A user cannot change the status of medical prescription

3. Professional

3.1 A professional shall create only one account

3.2 A professional shall have to view and update data of users based on their role 3.3 A professional shall be provided approval by user before any data sharing

3.4 A professional shall access limited portion of user data.

3.5 A professional shall fill their details required based on roles

3.6 A professional can work as desired role once verified by respective government entity

3.7 A professional can work with multiple users

3.8 A professional can work with only one user at a time.

4. Account

4.1 An account shall be created by only one user

4.2 An account shall be accessible from multiple devices

4.3 An account can have only one role associated with it

4.4 An account has different privileges based on roles

4.5 An account of professional shall not have their medical history 4.6 An account of professional shall be verified by government entity.

5. Role

5.1 A role shall be linked to many accounts

5.2 A role shall be assigned to account can be user, doctor or drug store

5.3 A role determines the functionality of account.

5.4 A role defines the different ability an account can hold.

5.5 A role for professional shall be verified by governmental entity

5.6 A role for professional can be revoked by governmental entity

6. Doctor

6.1 A Doctor should be verified before they can work with users

6.2 A doctor should be added as role to only professional account

6.3 A doctor shall add their specialty

6.4 A doctor can add multiple specialty 6.5 A doctor shall view full medical history.

6.6 A doctor shall make medicine prescription

6.7 A doctor shall make medical procedure and tests recommendation

6.8 A doctor shall update user data after making prescription

6.9 A doctor can only add data but cannot change any portion of medical history

6.10 A doctor cannot modify prescription of another doctor

6.11 A doctor shall add medical prescription with drug name, dosage and date

6.12 A doctor can submit empty prescription if no procedure or prescription is required

7. Drug Store

7.1 A drug store is role assigned to verified drug store

7.2 A drug store should be verified before they can work with user

7.3 A drug store shall view medicine prescription of user

7.4 A drug store shall only view medicine prescription not bought by user

7.5 A drug store should mark medicine sold and update in user's prescription status

7.6 A drug store cannot change the status of medicine prescription

8. Medical Prescription

8.1 A medical prescription shall have drug name

8.2 A medical prescription shall have dosage

8.3 A medical prescription should have date of issue.

9. Specialty

9.1 A specialty can be added by multiple doctors

Non-functional Database Requirements

1. Performance

1.1 The database system shall support concurrent transaction

1.2 The query and database storage action shall run in less than 2 seconds

2. Capacity

2.1 Tables should be assigned 10 MB of memory

2.2 The database system should support persistent storage

2.3 The size might be changed based on future requirement

3. Security

3.1 Password should be encrypted while storing in database

3.2 Only authenticated user in specific role can access the data required to them.

3.3 The patient should give their id before anyone can view medical details.

3.4 The database shall be automatically backed up every 6 hours.

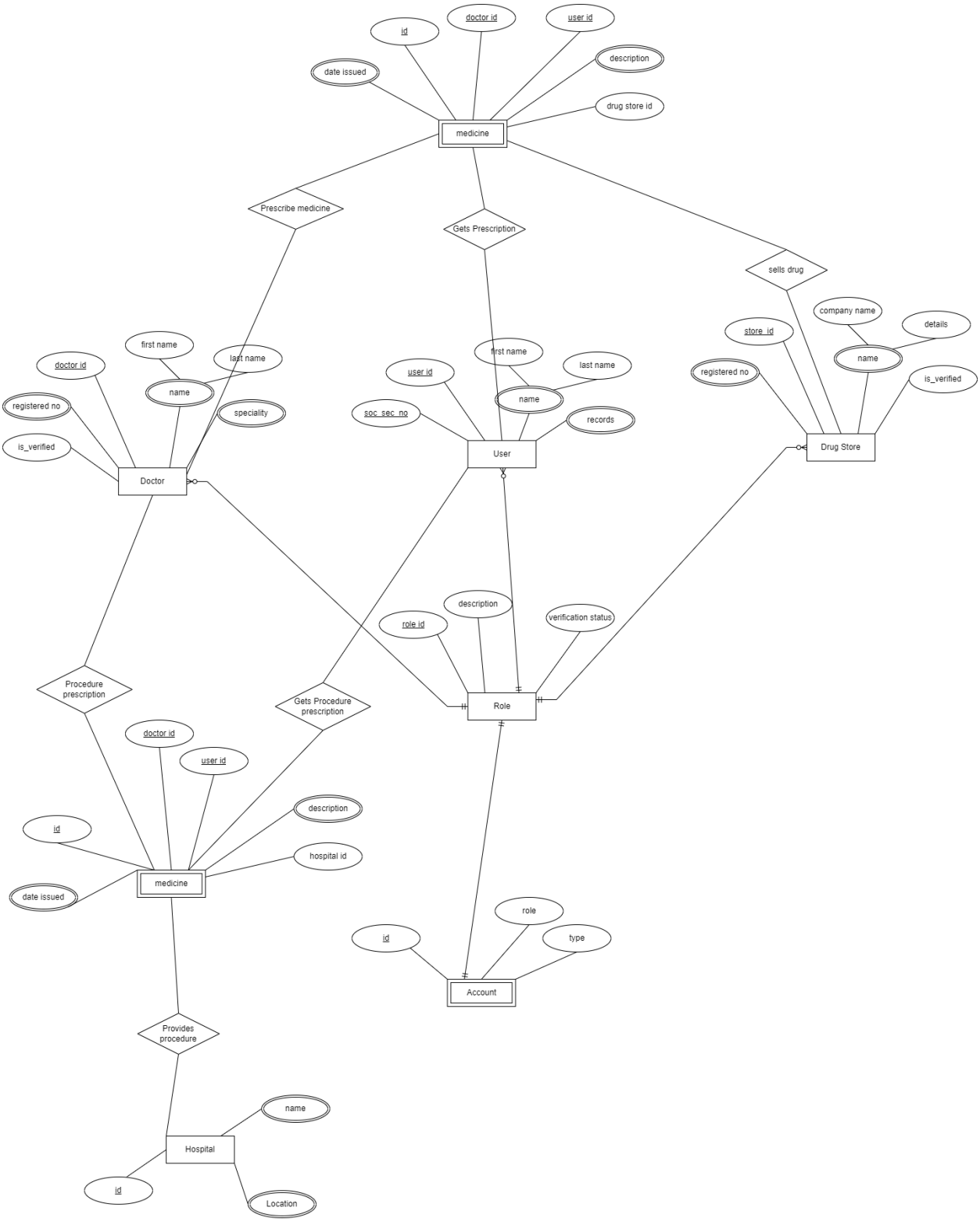
4. Compatibility

4.1 The database shall be supported by mysql.

5. Scalability

5.1 The database should be scalable as it holds lots of data.

Entity Relationship Diagram (ERD)



Entity Description

1. User (Strong)

- user_id: key, numeric
- soc_sec_no: key, numeric
- name: composite, alphanumeric
- records: multivalue, alphanumeric

2. Doctor (Strong)

- doctor_id: key, numeric
- registered_no: composite, alphanumeric
- name: composite, alphanumeric
- speciality: multivalue, alphanumeric
- is_verified: key, boolean

3. Drug Store (Strong)

- store_id: key, numeric
- registered_no: composite, alphanumeric
- name: composite, alphanumeric
- is_verified: key, boolean

4. Role (Strong)

- role_id: key, numeric
- description: alphanumeric
- verification_status: key, Boolean

5. Account (Weak)

- id: key, numeric
- role: key, numeric
- type: key, numeric

6. Hospital (Strong)

- id: key, numeric
- name: composite, alphanumeric
- location: composite, alphanumeric

7. Medicine Prescription (Weak)

- id: key, numeric
- doctor_id: key, numeric
- user_id: key, numeric
- description: alphanumeric
- date_issue: multivalue, timestamp
- drugstore_id: key, numeric

8. Procedure Prescription (Weak)

- id: key, numeric
- doctor_id: key, numeric
- user_id: key, numeric
- description: alphanumeric
- date_issue: multivalue, timestamp
- hospital_id: key, numeric