A red text on a white background

Description automatically generated

SECD2523 -16 Database: 20242025 – SEMESTER 1

LECTURER**:** SHARIFAH NURIZA BINTI SYED MUHAMMAD NAQUIB AL 'AIDRUS

Phase 2

|  |  |
| --- | --- |
| NAME | MATRIC ID |
| Liu Ruoyang | A23MJ4022 |
| Pranto Anik Islam | A23MJ4024 |
| KAHLAN SULTAN | A23MJ4021 |
| Buguoshun | A23MJ4019 |
| Saumik Hasan | A23MJ3009 |

**2.0 Database Design Requirements**

**2.1 Data Requirements**

|  |  |  |
| --- | --- | --- |
| **Entity** | **Data to be stored** | **Requirements of Data** |
| **Patient** | 1.patient ID  2.Full Name  3.Date of Birth  4.Contact Number  5. Email Adress | - [1] Patient ID is unique.  - [4] Contact number must follow the format XXX-XXX-XXXX.  - [5] Patients must provide a valid email address during registration. |
| **Doctor** | 1.Doctor ID  2.Full Name  3.Speciality  4.Contact Number | - [1] Doctor ID is unique.  - [3] Specialty must be specified and must match qualifications.  - [4] Contact number must follow the format XXX-XXX-XXXX. |
| **Nurse** | 1.Nurse ID  2.Full Name  3.Departemetn | - [1] Nurse ID is unique.  - [3] Contact number must follow the format XXX-XXX-XXXX.  - [4] Department must be assigned upon hiring. |
| **Appointment** | 1.Appointment ID  2.Patient ID  3.Doctor ID  4.Date and Time  5.Status | - [1] Appointment ID is unique.  - [2] [3] Patient ID and Doctor ID must be valid references.  - [4] Each appointment must have a scheduled date and time.  - [5] Status must be updated after each appointment (e.g., Completed, Cancelled). |
| **Department** | 1.Department ID  2.Departement Name  3.Location | - [1] Department ID is unique.  - [2] Department name must be specified and cannot be blank.  - [3] Location must be designated (e.g., Floor or Building). |
| **Treatment** | 1.Treatment ID  2.Patient ID  3.Doctor ID  4.Treatment Description  5. Date of Treatment | - [1] Treatment ID is unique.  - [3] Treatment description must be detailed and clear.  - [4] Date of treatment must be recorded. |
| **Medication** | 1.Medication ID  2.Name  3. Dosage | - [1] Medication ID is unique.  - [2] Medication name must be clearly specified.  - [3] Dosage must be defined and follow medical standards. |
| **Bill** | 1. Bill ID  2. Patient ID  3. Amount  4. Payment Status | - [1] Bill ID is unique.  - [2] Patient ID must be valid and linked to an existing patient.  - [3] Amount must be a positive decimal value.  - [4] Payment status must be updated upon payment processing. |
| **Lab Test** | 1. Test ID  2. Patient ID  3. Test Name  4. Data Conducted  5.Lab ID | - [1] Test ID is unique. - [2] Patient ID must be valid and linked to an existing patient.  - [3] Test name must be clearly specified.  - [4] Date conducted must be recorded and valid.  -[5]The Lab ID specifies where the test is performed. |
| **Visitor** | 1. Visitor ID  2. Patient ID  3. Relationship | - [1] Visitor ID is unique.  - [2] Patient ID must be valid and linked to an existing patient.  - [3] Visitor’s relationship to the patient must be specified. |
| **Inventory** | 1. Item ID  2. Item Name  3. Quantity | - [1] Item ID is unique.  - [2] Item name must be clearly specified and cannot be blank.  - [3] Quantity must be a non-negative integer. |
| **Emergency** | 1. Emergency ID  2. Patient ID  3.Date and Time of Emergency  4. Type of Emergency | - [1] Emergency ID is unique.  - [2] Patient ID must be valid and linked to an existing patient.  - [3] Date and time of the emergency must be recorded.  - [4] Type of emergency must be clearly specified. |

2.2 Transaction Requirements

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Entity | Data | Data Entry | Data Update | Data Deletion | Data Queries |
| **Patient** | 1.patient ID  2.Full Name  3.Date of Birth  4.Contact Number  5. Email Address | Sign up by patient, receptionist | Update information by patient | Delete account by receptionist | Query on patient data by doctor, nurse, patient, appointment, medication, bill, lab test, visitor, emergency |
| **Doctor** | 1.Doctor ID  2.Full Name  3.Speciality  4.Contact Number | Sign up by doctor | Update information by doctor | Delete account by doctor | Query on doctor data by patient, doctor, treatment, medication |
| **Nurse** | 1.Nurse ID  2.Full Name  3.Departemetn | Sign up by nurse | Update information by nurse | Delete account by nurse | Query on nurse data by patient, emergency |
| **Appointment** | 1.Appointment ID  2.Patient ID  3.Doctor ID  4.Date and Time  5.Status | Entered by patient | Update information by patient, doctor | Delete appointment by patient, doctor | Query on appointment data by doctor, patient |
| **Department** | 1.Department ID  2.Department Name  3.Location | Entered by manager | Update information by manager | Delete department data by manager | Query on department data by everyone |
| **Treatment** | 1.Treatment ID  2.Patient ID  3.Doctor ID  4.Treatment Description  5. Date of Treatment | Entered by doctor | Update information by doctor | Delete treatment by doctor | Query on treatment data by doctor, nurse, patient, medication, lab test |
| **Medication** | 1.Medication ID  2.Name  3. Dosage | Add new medication information | Update existing medication | Delete medication records | Query medication data for doctor,nurses,and pharmacists regarding prescriptions and treatments |
| **Bill** | 1. Bill ID  2. Patient ID  3. Amount  4. Payment Status | Create a new bill for a patient | Update billing details | Delete a bill record | Query bill information for patients, doctors, and billing departments |
| **Lab Test** | 1. Test ID  2. Patient ID  3. Test Name  4. Data Conducted  5.Lab ID | Record a new lab test for a patient | Update details of an existing lab test | Remove a lab test record | Query lab test information for doctors, nurses, and patients |
| **Visitor** | 1. Visitor ID  2. Patient ID  3. Relationship | Add a new visitor record for a patient | Update visitor details | Remove a visitor record | Query visitor information for patients, staff, and administration |
| **Inventory** | 1. Item ID  2. Item Name  3. Quantity | Add new inventory items | Update item details | Remove an inventory item | Query inventory information for staff and management regarding stock levels and availability |
| **Emergency** | 1. Emergency ID  2. Patient ID  3.Date and Time of Emergency  4. Type of Emergency | Record a new emergency incident for a patient | Update details of an existing emergency record | Remove an emergency record | Query emergency information for doctors, nurses, and emergency response teams |

2.3 Cross-Reference Analysis

The table shows the cross reference between the Patient, Doctor, Nurse and visitors views with the main type of data used by all the entities.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Doctor | Nurse | Visitor | Patient |
| Patient | X | X | X | X |
| Doctor | X | X |  | X |
| Nurse | X | X | X | X |
| Appointment | X | X |  | X |
| Department | X | X |  | X |
| Treatment | X | X |  | X |
| Medication | X | X |  | X |
| Lab Test | X | X |  | X |
| Bill | X | X |  | X |
| Visitor | X | X | X | X |
| Inventory | X | X |  |  |
| Emergency | X | X |  | X |