CZECH UNIVERSITY OF LIFE SCIENCES

FACULTY OF ECONOMICS AND MANAGEMENT

DATABASE PROJECT

Database for Hospital Management

PROJECT DONE BY:

REENA BHARATH

xbhar002@student.czu.cz

Introduction

The database was implemented in Oracle SQL Developer Data Modeller 21.4.1.349.1605.
This work designs a database that contains information about the Hospital management system. It intends to capture basic information needed for collection management. It's based on the following assumptions:

- ➔ Management Patients: For storing and managing the patient information. For storing details of the patient who is admitted and for patients who have come for check up

- ➔ Manage Doctors: For storing and managing the Doctor information and login account

- ➔ Manage Medicines: For storing and managing the Medical transactions.

- ➔ Manage Employees: To manage the number of employees working in the hospital

- ➔ Manage Room: For storing the details of Room.

OutLine

1. Possible use cases for the Model

2. Entity relationship diagrams

    2.1. Conceptual ERD

    2.2. Logical ERD

3. SQL Implementation

    3.1. DDL: Defining the database objects

    3.2. DML: Inserting the data

    3.3. SQL Queries

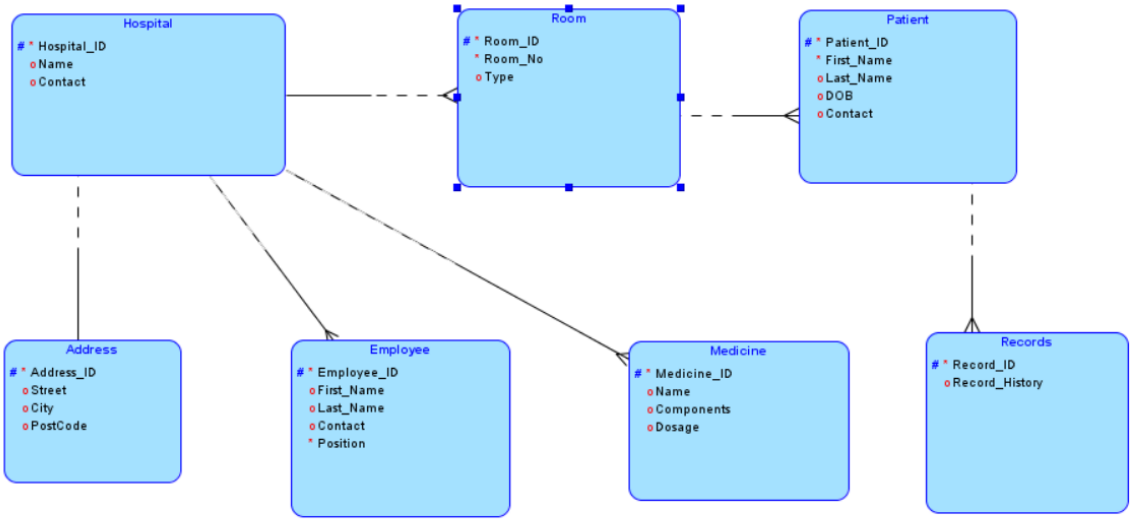
1. Possible use cases for the model

➔ Show all the employee names.
➔ Count the number of the patient.
➔ Show the employees who are Doctors.
➔ Show the patients who are in Room 1

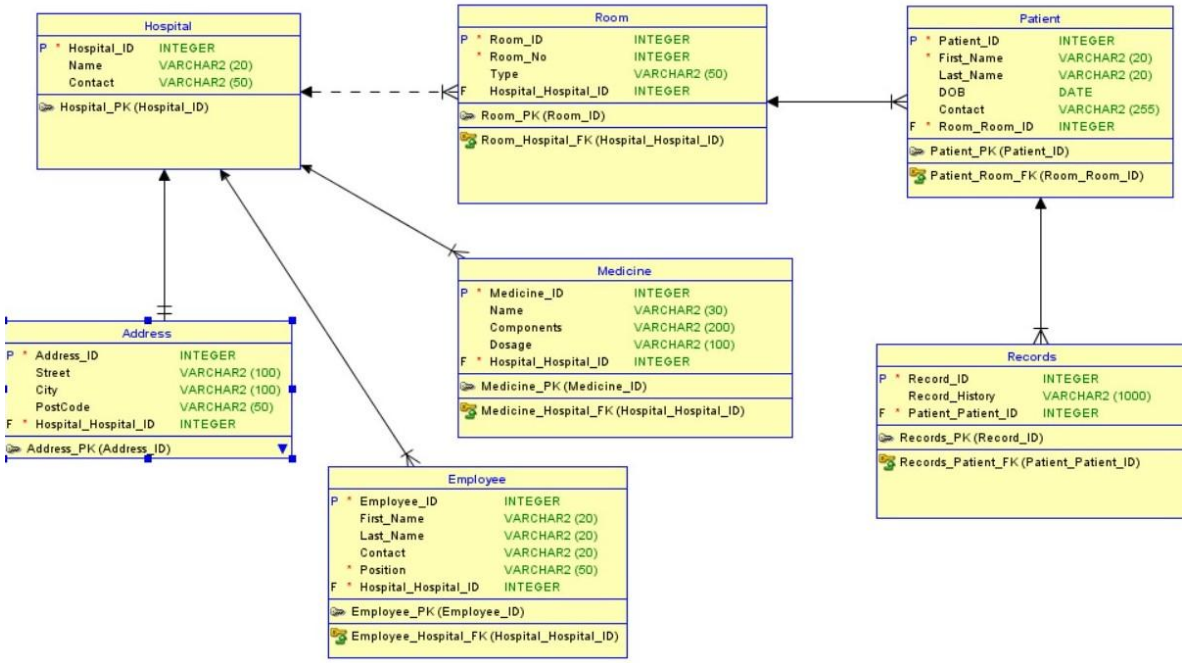
2. Entity relationship diagrams

Following section captures the proposed structure of the database using entity relationship diagrams.

2.1. Conceptual ERD



2.2 Logical ERD



3. SQL Implementation

The database was implemented in Oracle SQL Developer Data Modeller 21.4.1.349.1605.

3.1. DDL : Defining the database objects

```
CREATE TABLE address (
        address_id          INTEGER NOT NULL,
        street              VARCHAR2(100),
        city                VARCHAR2(100),
        postcode            VARCHAR2(50),
        hospital_hospital_id INTEGER NOT NULL
);
```

```
CREATE UNIQUE INDEX address__idx ON address (
        hospital_hospital_id ASC
        );

CREATE TABLE employee (
    employee_id         INTEGER NOT NULL,
    first_name          VARCHAR2(20),
    last_name           VARCHAR2(20),
    contact             VARCHAR2(20),
    position            VARCHAR2(50) NOT NULL,
    hospital_hospital_id INTEGER NOT NULL
);

CREATE TABLE hospital (
    hospital_id INTEGER NOT NULL,
    name        VARCHAR2(20),
    contact     VARCHAR2(50)
);
CREATE TABLE medicine (
    medicine_id         INTEGER NOT NULL,
    name                VARCHAR2(30),
    components          VARCHAR2(200),
    dosage              VARCHAR2(100),
    hospital_hospital_id INTEGER NOT NULL
);

CREATE TABLE patient (
    patient_id   INTEGER NOT NULL,
    first_name   VARCHAR2(20) NOT NULL,
    last_name    VARCHAR2(20),
    dob          DATE,
    contact      VARCHAR2(255),
```

```
    room_room_id INTEGER NOT NULL
);

CREATE TABLE records (
    record_id          INTEGER NOT NULL,
    record_history     VARCHAR2(1000),
    patient_patient_id INTEGER NOT NULL
);

CREATE TABLE room (
    room_id              INTEGER NOT NULL,
    room_no              INTEGER NOT NULL,
    type                 VARCHAR2(50),
    hospital_hospital_id INTEGER
);
```

Constraints:

ALTER TABLE address ADD CONSTRAINT address_pk PRIMARY KEY (address_id);

ALTER TABLE employee ADD CONSTRAINT employee_pk PRIMARY KEY (employee_id);

ALTER TABLE hospital ADD CONSTRAINT hospital_pk PRIMARY KEY (hospital_id);

ALTER TABLE medicine ADD CONSTRAINT medicine_pk PRIMARY KEY (medicine_id);

ALTER TABLE patient ADD CONSTRAINT patient_pk PRIMARY KEY (patient_id);

ALTER TABLE records ADD CONSTRAINT records_pk PRIMARY KEY (record_id);

ALTER TABLE room ADD CONSTRAINT room_pk PRIMARY KEY (room_id);

ALTER TABLE address
ADD CONSTRAINT address_hospital_fk FOREIGN KEY (hospital_hospital_id)
REFERENCES hospital (hospital_id);

ALTER TABLE employee
ADD CONSTRAINT employee_hospital_fk FOREIGN KEY (hospital_hospital_id)
REFERENCES hospital (hospital_id);

```
ALTER TABLE medicine
    ADD CONSTRAINT medicine_hospital_fk FOREIGN KEY ( hospital_hospital_id )
    REFERENCES hospital ( hospital_id );

ALTER TABLE patient
     ADD CONSTRAINT patient_room_fk FOREIGN KEY ( room_room_id )
    REFERENCES room ( room_id );

ALTER TABLE records
     ADD CONSTRAINT records_patient_fk FOREIGN KEY ( patient_patient_id )
    REFERENCES patient ( patient_id );

ALTER TABLE room
     ADD CONSTRAINT room_hospital_fk FOREIGN KEY ( hospital_hospital_id )
    REFERENCES hospital ( hospital_id );
```

3.2. DML: Inserting the data

INSERT INTO Hospital values (seq_hospital.nextval,'Czech Hospital', '+420333333333');

INSERT INTO Hospital values (seq_hospital.nextval,'Johnson Hospital', '+420111111111');

INSERT INTO Hospital values (seq_hospital.nextval,’Kalyani Hospital’,’+420752080’);

INSERT INTO Hospital values (seq_hospital.nextval,’Reena Hospital’,’+420000000000’);

INSERT INTO Address values (seq_address.nextval,'Hostenskiho 29','Prague','16500', 1);

INSERT INTO Address values (seq_address.nextval,'Kamycka 1281','Prague','16520', 2);

INSERT INTO Address values (seq_address.nextval,'Evropska 15','Plzen','52500', 3);

INSERT INTO Address values (seq_address.nextval,'Strahov 20','Brno','00000', 4);

```
INSERT INTO Employee values (seq_employee.nextval,
'Selvi','Philip','+992796','Receptionist', 1)
;
INSERT INTO Employee values (seq_employee.nextval,
'Reena','Bharath','+426969','Surgeon', 2);

INSERT INTO Employee values (seq_employee.nextval,
'Prakash','Sundharam','+07798427', 'Nurse', 3);

INSERT INTO Employee values (seq_employee.nextval,
'Anjali','Prakash','+9199973','Doctor', 4);



INSERT INTO Medicine values (seq_medicine.nextval,
'Dolo','ABC','500mg', 1);

INSERT INTO Medicine values (seq_medicine.nextvalue,'Pan
D','DEF','250g', 2);

INSERT INTO Medicine values (seq_medicine.nextval,'Cough
Syrup','HIJ','250ml', 3);


INSERT INTO Room values (seq_room.nextval,'001','ICU', 1);

INSERT INTO Room values (seq_room.nextval,'002','Normal Ward',
2);

INSERT INTO Room values (seq_room.nextval,'101','Covid Ward',
3);

INSERT INTO Room values (seq_room.nextval,'201','ICU', 4);
```

```
INSERT INTO Patient values
(seq_patient.nextval,'Angela','Micheal','02-15-2001','+8454634535',
1);

INSERT INTO Patient values
(seq_patient.nextval,'James','CJ','05-08-1990', '+32980800', 2);

INSERT INTO Patient values
(seq_patient.nextval,'Priya','Darshini','05-21-1998','+96376926', 1);



INSERT INTO Records values (seq_records.nextval,'Fever', 2);

INSERT INTO Records values (seq_records.nextval,'cold', 3);

INSERT INTO Records values (seq_records.nextval,'Typhoid', 4);
```

3.3. SQL Queries

a. Fetch all Hospital Name and employees who work there

```
SELECT  employee.first_name, employee.last_name,
employee.contact, employee.position, hospital.name, hospital.contact
FROM employee
inner join hospital
on hospital.hospital_id = employee.hospital_hospital_id;
```

b. Find the Hospital which is in Prague.

```
select hospital.name, hospital.contact, address.street,
address.city, address.postcode
from hospital
inner join address
on hospital.hospital_id = address.hospital_hospital_id
where address.city = 'Prague';
```

c. View All Employees that works in the Hospital

```
SELECT employee.first_name, employee.last_name,
employee.contact, employee.position, hospital.name,
hospital.contact
FROM employee
inner join hospital
on employee.hospital_hospital_id = hospital.hospital_id
where employee.hospital_hospital_id = 1;
```

d. Show the Patients who are in Room 1

```
SELECT patient.first_name, patient.last_name, patient.dob,
patient.contact, room.room_no, room.type
```

```
FROM Patient
inner join room
on room.room_id = patient.room_room_id
where room.room_id = 1;
```

e. Fetch all Name and Patient Record History.

```
SELECT patient.first_name, patient.last_name, patient.dob,
patient.contact, records.record_history
FROM patient
inner JOIN records
ON patient.patient_id= records.patient_patient_id;
```

4. Conclusion

The hospital management system is the inevitable part of the lifecycle of the modern medical institution.
It automates numerous daily operations and enables smooth interactions of the users.

Developing hospital system software is a great opportunity to create a distinct, efficient and fast delivering healthcare model.

Implementation of hospital management system projects helps to store all kinds of records, provide coordination and user communication, implement policies, improve day-to-day operations, arrange the supply chain, manage financial and human resources, and market hospital services.