

Assignment - 01

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Subject :- Database management System

Subject code :- CSA0593

ASSIGNMENT - 01

1. Develop a database for managing student housing, including rooms, residents, maintenance requests, and staff assignments.

Requirements :- * Model tables for building rooms, students, maintenance requests, and staff.

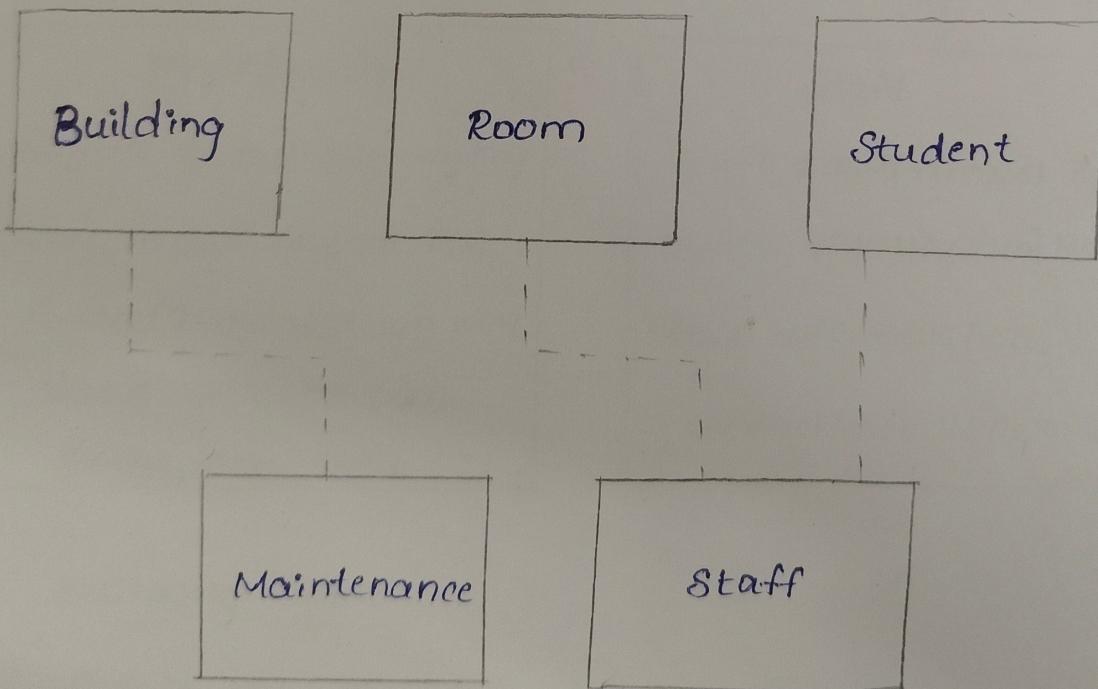
* Write stored procedures for processing maintenance requests and assigning rooms to students.

* Implement triggers to update room availability and track occupancy in real-time.

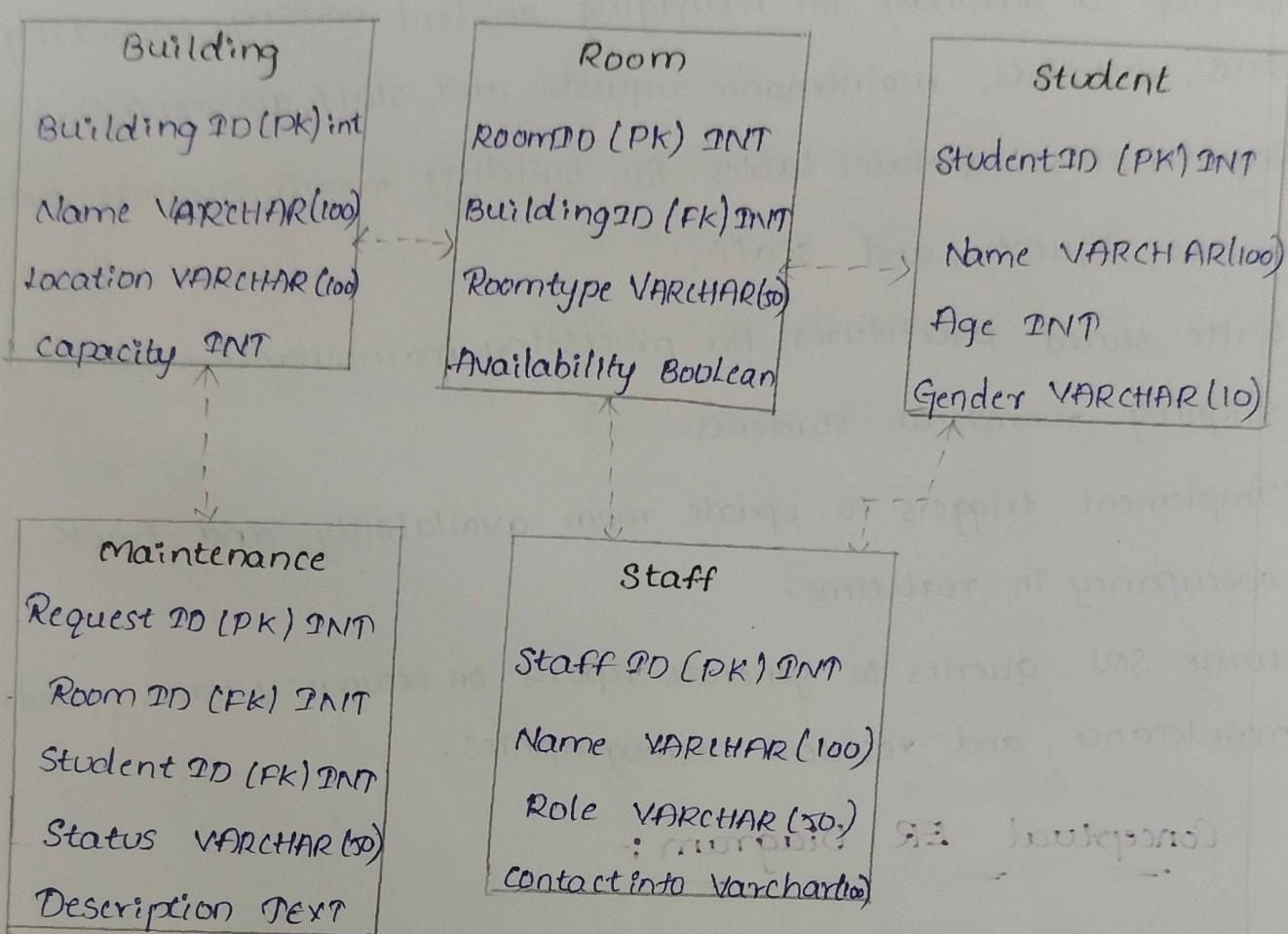
* Write SQL queries to generate reports on occupancy rates, pending maintenance, and resident demographics.

Sol:

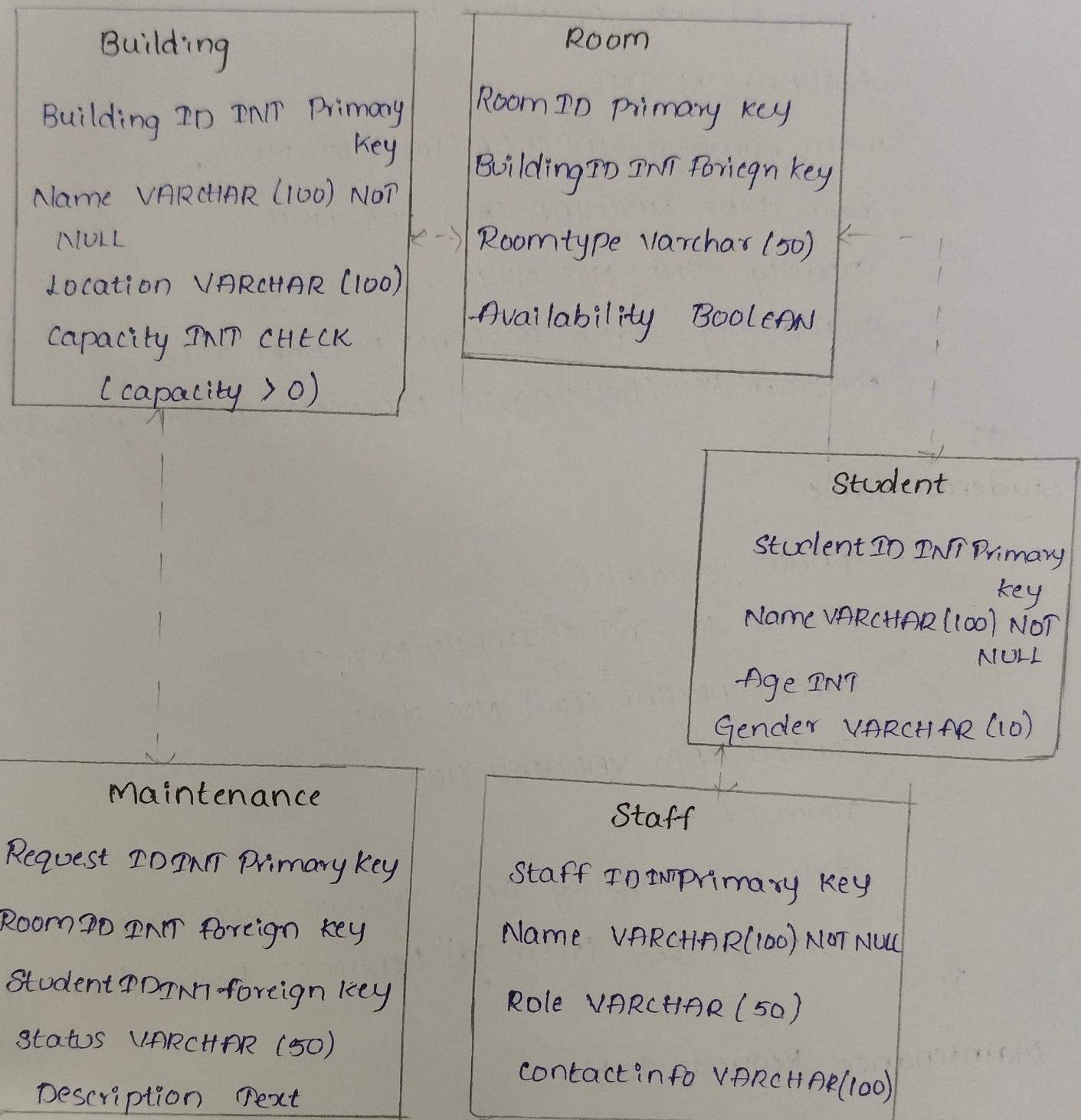
Conceptual ER Diagram :-



Logical ER Diagram:



physical ER DIAGRAM



Building Table

Create Table Buildings (

```
building_id INT Primary key,  
building_name VARCHAR(100) NOT NULL;  
location varchar(100) NOT NULL  
);
```

Rooms Table

```
CREATE TABLE Rooms (
    room_id INT PRIMARY KEY,
    building_id INT,
    room_number VARCHAR(10) NOT NULL,
    room_type VARCHAR(50) NOT NULL,
    capacity INT NOT NULL,
    availability_status BOOLEAN DEFAULT TRUE,
    FOREIGN KEY (building_id) REFERENCES Buildings (building_id)
);
```

Students Table

```
CREATE TABLE Students (
    student_id INT PRIMARY KEY,
    name VARCHAR(100) NOT NULL,
    contact_info VARCHAR(100),
    room_id INT,
    date_of_occupancy DATE DEFAULT CURRENT_DATE,
    FOREIGN KEY (room_id) REFERENCES Rooms (room_id)
);
```

Maintenance Requests Table.

```
CREATE TABLE MaintenanceRequests (
    request_id INT PRIMARY KEY,
    room_id INT,
    staff_id INT,
    request_date DATE DEFAULT CURRENT_DATE,
    status VARCHAR(20) DEFAULT 'Pending',
);
```

issue_details TEXT,
FOREIGN KEY (room_id) REFERENCES Rooms (room_id),
FOREIGN KEY (staff_id) REFERENCES Staff (staff_id)
);

Staff Table

```
CREATE TABLE Staff (  
    staff_id INT PRIMARY KEY,  
    name VARCHAR(100) NOT NULL,  
    role VARCHAR(50),  
    contact_info VARCHAR(400)  
);
```

Stored Procedures

```
CREATE PROCEDURE Assign RoomToStudent (IN student_name  
VARCHAR(100), IN selected_room_id INT BEGIN.  
DECLARE student_id INT;  
INSERT INTO STUDENTS (name, room_id, date_of_occupancy)  
VALUES (student_name, selected_room_id SET student_id =  
LAST_INSERT_ID());  
UPDATE ROOMS SET availability_status = FALSE WHERE  
room_id = selected_room_id;  
DELIMITER ;
```

Process Maintenance Request

```
CREATE PROCEDURE Process Maintenance Request (IN room_id INT,  
IN staff_id INT, IN issue TEXT)  
BEGIN  
    INSERT INTO Maintenance Requests (room_id, staff_id, request  
-date, status, issue_detail);
```

VALUES (room_id, staff_id, CURRENT_DATE, 'Pending', issue);
DELIMITER ;

Triggers

CREATE TRIGGER updateRoomAvailabilityOnCheckout
AFTER DELETE ON Students
FOR EACH ROW
BEGIN
 UPDATE Rooms SET availability_Status = TRUE WHERE room_id = OLD.room_id;
END

DELIMITER ;

Track Maintenance Request Completion.

CREATE TRIGGER trackMaintenanceCompletion
AFTER UPDATE ON Maintenance Requests
FOR EACH ROW
BEGIN

IF New.status = 'Completed' THEN
 UPDATE Rooms SET availability_Status = TRUE
 WHERE Room_id = New.room_id;
END IF;

END

DELIMITER ;

(RoomToStudent (IN student_name VARCHAR(100), IN
Selected_room_id INT))

Conclusion:

These ERD's, along with SQL code for tables, stored procedures, triggers and analytical queries, provide a complete Student Housing management database that supports real-time occupancy tracking, room assignment, maintenance requests, and useful reports.