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Subject: Database management system

CSB0593

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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 coccupancy in real-time.

\*write SOL queries to generate reports on occupancy rates, pending maintenance, and resident demographics.

Conceptual ER Diagram:

Building

Soli

Room

Student

Mainlenance

Staff

Building
Building IDLPK) int
Name VARCHAR(100)
Jocation VARCHAR(100)
Capacity INT

Room
Room
Room
Room
Room
Room
Room
type VARCHARIO
Availability Boolcan

Student
Student 2D (PK) 2NT
Name VARCH AR(100)
Age 2NT
Gender VARCHAR(10)

Maintenance
Request DD (PK) DNIT

Room DD (FK) DNIT

Student DD (FK) DNIT

Status VARCHAR (D)

Description Text

Staff
Staff ID (PK) IM
Name VARIHAR (100)
Role VARCHAR (50.)
Contact Into Varcharlia)

## Physical ER DIEGRAM

Building
Building ID INT Primary
Key

Name VARCHAR (100) NoT

NOUL

Location VARCHAR (100)

Capacity INT CHECK

Locapacity > 0)

Room

Room ID Primary Key

Building ID INT Foriegn Key

Room type Warchar (50)

Availability BooleAN

Student

Student ID INT Primary
key
Name VARCHAR (100) NOT
NULL
Age INT
Gender VARCHAR (10)

Maintenance
Request IDINT Primary key
Room ID INT foreign key
Student IDINT foreign key
Student IDINT foreign key
Status VARCHAR (50)
Description Pext

Staff
Staff Inimprimary Key
Name VARCHAR(100) NOT NUL
Role VARCHAR (50)
Contactinfo VARCHAR(100)

Building Table

Create Pable Buildings (

building id INT Primary key,
building Name YARCHAR (100) NOT NULL;
Location warchar (100) NOT NULL

```
Rooms Table
   CREATE TABLE ROOMS (
          room id INT PRINARY KEY.
          building Id INT,
          room_ number VARCHAR (10) NOT NULL,
          YOOM. TYPE VARCHAR (50) NOT NULL,
          capacity INF NOT NULL,
          availability - status BOOCEAN DEFAULT TRUE,
          FORETEN KEY (building-id) REFERENCES Buildings (building
   1;
Students Pable
   CREATE BABLE Students (
           Student id INT PRIMARY Key
           name VARCHAR (100) NOT NULL,
           contact_info VARCHAR (100),
           room_id INT.
           date- of- occupancy DATE DEPAULT CURRENT_DATE,
           FORTEGN KEY (room_id) References Rooms (room_id)
    );
Maintenance Requests Table.
    CREATE TABLE Maintenance Requests (
         acquestid ant pramary key,
         stoom_id INT,
         Staff-id INT.
        request_date DATE DEFAULT CURRENT_DATE,
         Status VARCHAR (20) DEFAULT 'Pending',
```

```
issue details Text,
      FORETAN Key (noomed) REFERENCES Rooms (noomeid).
      PORETGN KEY (Staff. id) REFERENCES Staff (Staff. id)
     );
  Staff Table
      CREATE TABLE Staff (
           Staff - I'd I'M PRIMARY KEY,
          rame VARCHAR (100) NOT NULL.
           role VARCHAR (190),
           contact - info VARCHAR (100)
       );
 Stored Procedures
  CREATE PROCEDURE Assign RoomTo student (IN student_name
  VARCHAR (100), IN selected-room_Id INT BEGIN.
         DECLARE Student _ id INT:
        INSERT INTO STUDENTS (rame, room_id, date-to-accupancy)
         NALUES ( student-name, selected SET Student-id =
             LAST INSERT ID():
        UPDATE ROOMS SET availability-status = FALSE INHERE
       noom -id = Selected_room_id;
   DELIMITER:
                                       STREET PRINCIPLE
        Maintenance Request
Process
CREATE PROCEDURE Process Maintenance Request (IN room-id INT),
    IN Staff_id INT, IN ISSUE TEXT)
BEGIN
      INSERT INTO Naintenance Requests (room-id, staff-id, request
         -date, status, issue detail).
```

```
vinities (room id, starf-id, current_pate, pending, issue);
DELINITER;
Priggers
   create Trigger update Roomavailability on checkout
 AFTER DELETE ON Students
   FOR EACH ROW
   BEGIN
        UPPATE ROOMS SET availability-status = TRUE WHERE YOUM-
        id = OLD. room_id;
     END
  DELIMITER;
Track Maintenance Request completion.
 CREATE TRIGGER Track Maintenance completion
AFTER UPDATE ON Maintenance Requests
  FOR EACH ROW
  BEGIN
        2F New . Status = completed THEN
             UPDATE ROOMS SET availability - Status = TRUE
        WHERE ROOM-id = NEW . room_id;
             END IF;
     ENID
   DEMINITER ,
```

(Room Postudent (IN Student-name VARCHAR (100), IN Selected\_room\_ Pol\_ INT) Conclusion:

These GRD's, along with soll code for tables, stored procedures, triggers and analytical overes, provide a complete student thousing management database that supports real-time occupancy tracking, room assignment, maintenance requests, and useful reports.