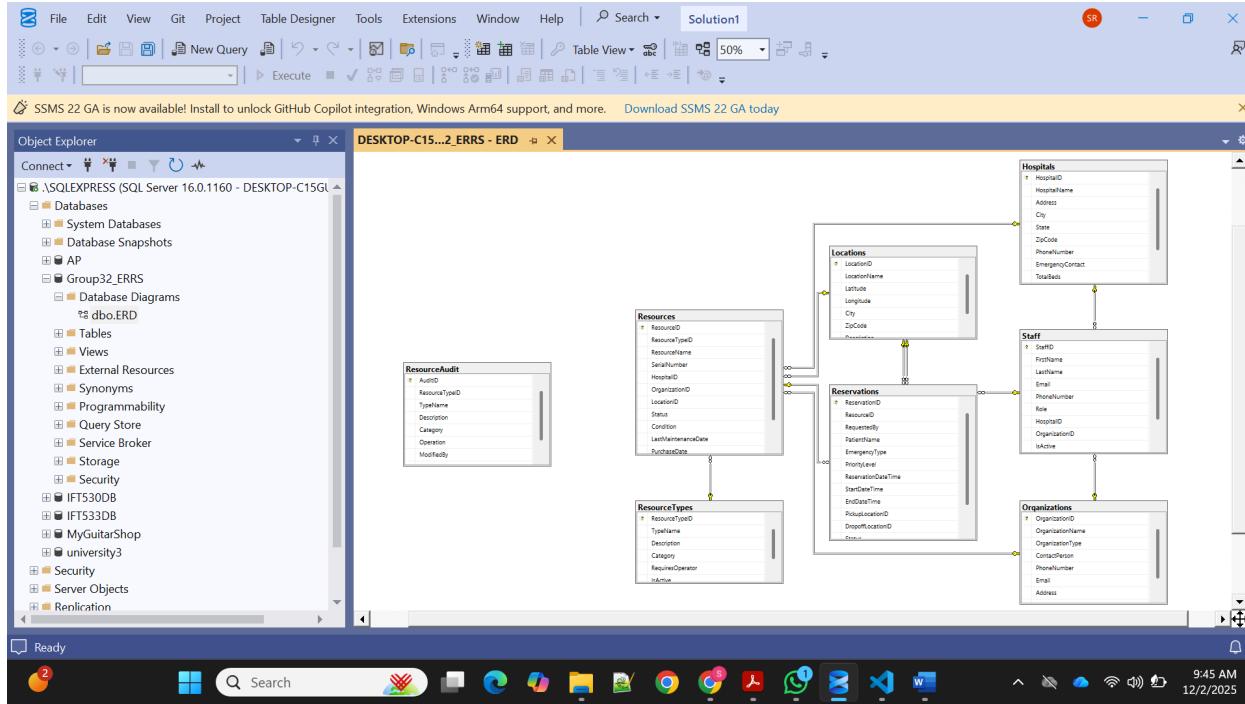


Emergency Resource Reservation and Coordination System (ERRS)

1. Entity Relationship Diagram (ERD)



The ERD below shows the core structure of the Emergency Resource Reservation System. It includes all major entities such as Hospitals, Organizations, Staff, ResourceTypes, Resources, Locations, Reservations, and the ResourceAudit table. Each table is connected through primary and foreign keys, making it possible to track where each resource is located, who owns it, and how it is used. The design supports real-time coordination by linking resources to reservations and logging changes for accountability. The relationships shown in the ERD ensure that each reservation is linked to a specific resource, requester, and location, enabling accurate tracking and coordination of emergency operations.

2. Database Creation

Code :

```
/*
=====
```

```
IFT530 - Database Management
```

```
Final Project: Emergency Resource Reservation and Coordination System (ERRS)
```

Group Number: 32

Team Members: Suraj Ravindra Rao, Mansi Nandkar

Date: November 2025

Description: Database system for managing emergency resources including ambulances, ICU beds, oxygen cylinders, and medical equipment across hospitals, NGOs, and emergency response teams.

```
=====
*/
```

```
-- =====
```

```
-- DATABASE SETUP
```

```
-- =====
```

```
-- Switch to master database before dropping
USE master;
GO

-- Drop database if it exists
IF EXISTS (SELECT * FROM sys.databases WHERE name = 'Group32_ERRS')
BEGIN
    ALTER DATABASE Group32_ERRS SET SINGLE_USER WITH ROLLBACK IMMEDIATE;
    DROP DATABASE Group32_ERRS;
END
GO

-- Create new database
CREATE DATABASE Group32_ERRS;
GO

-- Switch to new database
USE Group32_ERRS;
GO

PRINT 'Database created successfully';

GO
```

The screenshot shows two instances of SQL Server Management Studio (SSMS) running side-by-side. Both instances have the same setup: the Object Explorer on the left, the 'Project.sql ...aosuraj (53)' script editor in the center, and the Messages pane at the bottom.

Script Editor Content (Top Instance):

```

1  /*
2  =====
3  IFT530 - Database Management
4  Final Project: Emergency Resource Reservation and Coordination System (ERRS)
5
6  Group Number: 32
7  Team Members: Suraj Ravindra Rao, Mansi Nandkar
8  Date: November 2025
9
10 Description: Database system for managing emergency resources including ambulances, ICU beds, oxygen cylinders, and medical equipment across hospitals, NGOs, and emergency response teams.
11 =====
12 */
13
14
15
16
17 -- =====
18 -- DATABASE SETUP
19
20
21 -- Switch to master database before dropping
USE master;
GO

```

Messages Pane (Top Instance):

- No issues found
- Database created successfully
- Completion time: 2025-12-02T09:53:05.1024465-07:00

Script Editor Content (Bottom Instance):

```

21 USE master;
22 GO
23
24 -- Drop database if it exists
25 IF EXISTS (SELECT * FROM sys.databases WHERE name = 'Group32_ERRS')
26 BEGIN
27     ALTER DATABASE Group32_ERRS SET SINGLE_USER WITH ROLLBACK IMMEDIATE;
28     DROP DATABASE Group32_ERRS;
29 END
30 GO
31
32 -- Create new database
33 CREATE DATABASE Group32_ERRS;
34 GO
35
36 -- Switch to new database
37 USE Group32_ERRS;
38 GO
39
40 PRINT 'Database created successfully';
41 GO

```

Messages Pane (Bottom Instance):

- No issues found
- Database created successfully
- Completion time: 2025-12-02T09:53:05.1024465-07:00

The database initialization script prepares a clean environment by removing any existing version of the Group32_ERRS database and recreating it. This ensures reproducibility and consistency across executions.

3. Table Creation

Code :

```

-- =====
-- CREATE TABLES
-- =====

-- Table 1: Hospitals
CREATE TABLE Hospitals (
    HospitalID INT IDENTITY(1,1) PRIMARY KEY,
    HospitalName VARCHAR(100) NOT NULL,

```

```
Address VARCHAR(200) NOT NULL,  
City VARCHAR(50) NOT NULL,  
State VARCHAR(2) NOT NULL,  
ZipCode VARCHAR(10) NOT NULL,  
PhoneNumber VARCHAR(15) NOT NULL,  
EmergencyContact VARCHAR(15) NULL,  
TotalBeds INT NULL CHECK (TotalBeds >= 0),  
IsActive BIT NOT NULL DEFAULT 1
```

);

GO

-- Table 2: Organizations

```
CREATE TABLE Organizations (  
    OrganizationID INT IDENTITY(1,1) PRIMARY KEY,  
    OrganizationName VARCHAR(100) NOT NULL,  
    OrganizationType VARCHAR(50) NOT NULL,  
    ContactPerson VARCHAR(100) NULL,  
    PhoneNumber VARCHAR(15) NOT NULL,  
    Email VARCHAR(100) NULL,  
    Address VARCHAR(200) NOT NULL,  
    IsActive BIT NOT NULL DEFAULT 1
```

);

GO

-- Table 3: ResourceTypes

```
CREATE TABLE ResourceTypes (  
    ResourceTypeID INT IDENTITY(1,1) PRIMARY KEY,  
    TypeName VARCHAR(50) NOT NULL UNIQUE,  
    Description VARCHAR(200) NULL,  
    Category VARCHAR(50) NOT NULL,  
    RequiresOperator BIT NOT NULL DEFAULT 0,  
    IsActive BIT NOT NULL DEFAULT 1
```

);

GO

-- Table 4: Locations

```
CREATE TABLE Locations (  
    LocationID INT IDENTITY(1,1) PRIMARY KEY,  
    LocationName VARCHAR(100) NOT NULL,  
    Latitude DECIMAL(9,6) NULL,  
    Longitude DECIMAL(9,6) NULL,  
    City VARCHAR(50) NOT NULL,  
    ZipCode VARCHAR(10) NULL,  
    Description VARCHAR(200) NULL
```

);

GO

-- Table 5: Staff

```
CREATE TABLE Staff (  
    StaffID INT IDENTITY(1,1) PRIMARY KEY,  
    FirstName VARCHAR(50) NOT NULL,  
    LastName VARCHAR(50) NOT NULL,  
    Email VARCHAR(100) NOT NULL UNIQUE,  
    PhoneNumber VARCHAR(15) NULL,  
    Role VARCHAR(50) NOT NULL,  
    HospitalID INT NULL,
```

```

OrganizationID INT NULL,
IsActive BIT NOT NULL DEFAULT 1,
CreatedDate DATETIME NOT NULL DEFAULT GETDATE(),
CONSTRAINT FK_Staff_Hospital FOREIGN KEY (HospitalID) REFERENCES Hospitals(HospitalID),
CONSTRAINT FK_Staff_Organization FOREIGN KEY (OrganizationID) REFERENCES Organizations(OrganizationID)
);
GO

```

-- Table 6: Resources (Transactional)

```

CREATE TABLE Resources (
    ResourceID INT IDENTITY(1,1) PRIMARY KEY,
    ResourceTypeID INT NOT NULL,
    ResourceName VARCHAR(100) NOT NULL,
    SerialNumber VARCHAR(50) NULL UNIQUE,
    HospitalID INT NULL,
    OrganizationID INT NULL,
    LocationID INT NOT NULL,
    Status VARCHAR(20) NOT NULL DEFAULT 'Available',
    Condition VARCHAR(20) NOT NULL DEFAULT 'Good',
    LastMaintenanceDate DATE NULL,
    PurchaseDate DATE NULL,
    IsActive BIT NOT NULL DEFAULT 1,
    CONSTRAINT FK_Resources_ResourceType FOREIGN KEY (ResourceTypeID) REFERENCES ResourceTypes(ResourceTypeID),
    CONSTRAINT FK_Resources_Hospital FOREIGN KEY (HospitalID) REFERENCES Hospitals(HospitalID),
    CONSTRAINT FK_Resources_Organization FOREIGN KEY (OrganizationID) REFERENCES Organizations(OrganizationID),
    CONSTRAINT FK_Resources_Location FOREIGN KEY (LocationID) REFERENCES Locations(LocationID),
    CONSTRAINT CHK_Resources_Status CHECK (Status IN ('Available', 'In Use', 'Maintenance', 'Out of Service')),
    CONSTRAINT CHK_Resources_Condition CHECK (Condition IN ('Good', 'Fair', 'Poor'))
);
GO

```

-- Table 7: Reservations (Transactional)

```

CREATE TABLE Reservations (
    ReservationID INT IDENTITY(1,1) PRIMARY KEY,
    ResourceID INT NOT NULL,
    RequestedBy INT NOT NULL,
    PatientName VARCHAR(100) NULL,
    EmergencyType VARCHAR(50) NOT NULL,
    PriorityLevel INT NOT NULL CHECK (PriorityLevel BETWEEN 1 AND 5),
    ReservationDateTime DATETIME NOT NULL DEFAULT GETDATE(),
    StartDateTime DATETIME NOT NULL,
    EndDateTime DATETIME NULL,
    PickupLocationID INT NULL,
    DropoffLocationID INT NULL,
    Status VARCHAR(20) NOT NULL DEFAULT 'Active',
    Notes VARCHAR(500) NULL,
    CONSTRAINT FK_Reservations_Resource FOREIGN KEY (ResourceID) REFERENCES Resources(ResourceID),
    CONSTRAINT FK_Reservations_Staff FOREIGN KEY (RequestedBy) REFERENCES Staff(StaffID),
    CONSTRAINT FK_Reservations_PickupLocation FOREIGN KEY (PickupLocationID) REFERENCES Locations(LocationID),
    CONSTRAINT FK_Reservations_DropoffLocation FOREIGN KEY (DropoffLocationID) REFERENCES Locations(LocationID),
    CONSTRAINT CHK_Reservations_Status CHECK (Status IN ('Active', 'Completed', 'Cancelled'))
);
GO

```

-- Table 8: ResourceAudit (Audit Table)

```

CREATE TABLE ResourceAudit (

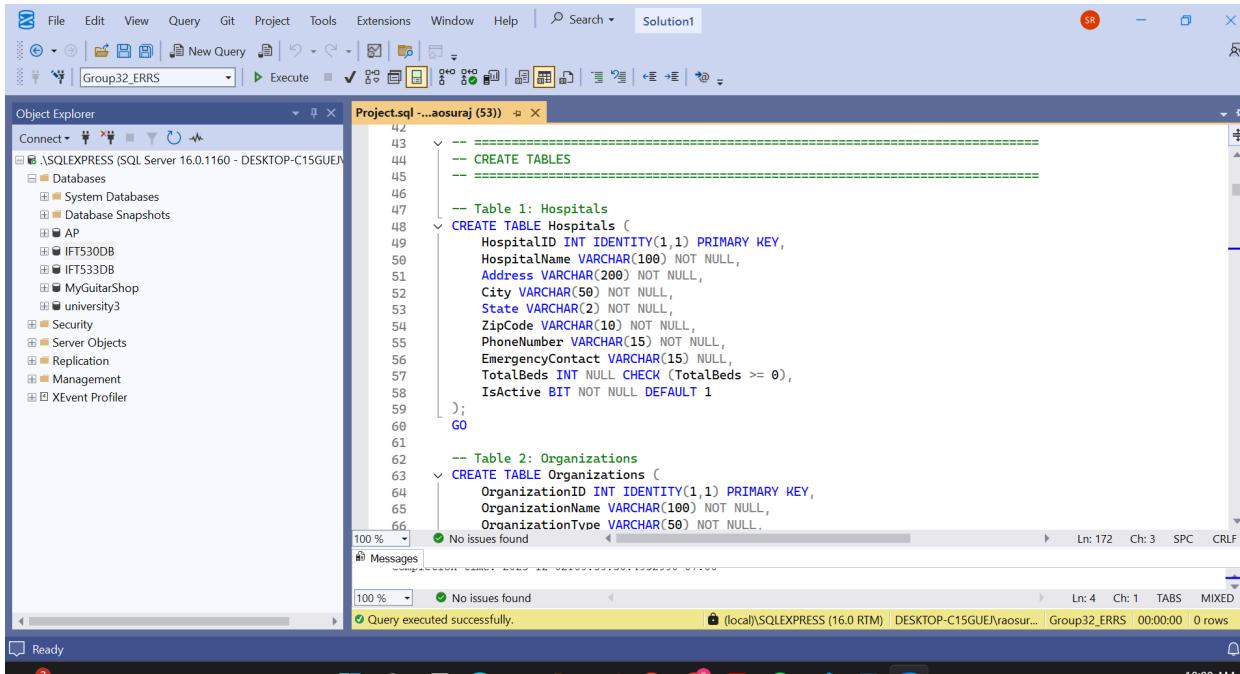
```

```

AuditID INT IDENTITY(1,1) PRIMARY KEY,
ResourceTypeID INT NOT NULL,
TypeName VARCHAR(50) NOT NULL,
Description VARCHAR(200) NULL,
Category VARCHAR(50) NOT NULL,
Operation VARCHAR(10) NOT NULL,
ModifiedBy VARCHAR(100) NULL,
ModifiedDate DATETIME NOT NULL DEFAULT GETDATE()
);

```

GO



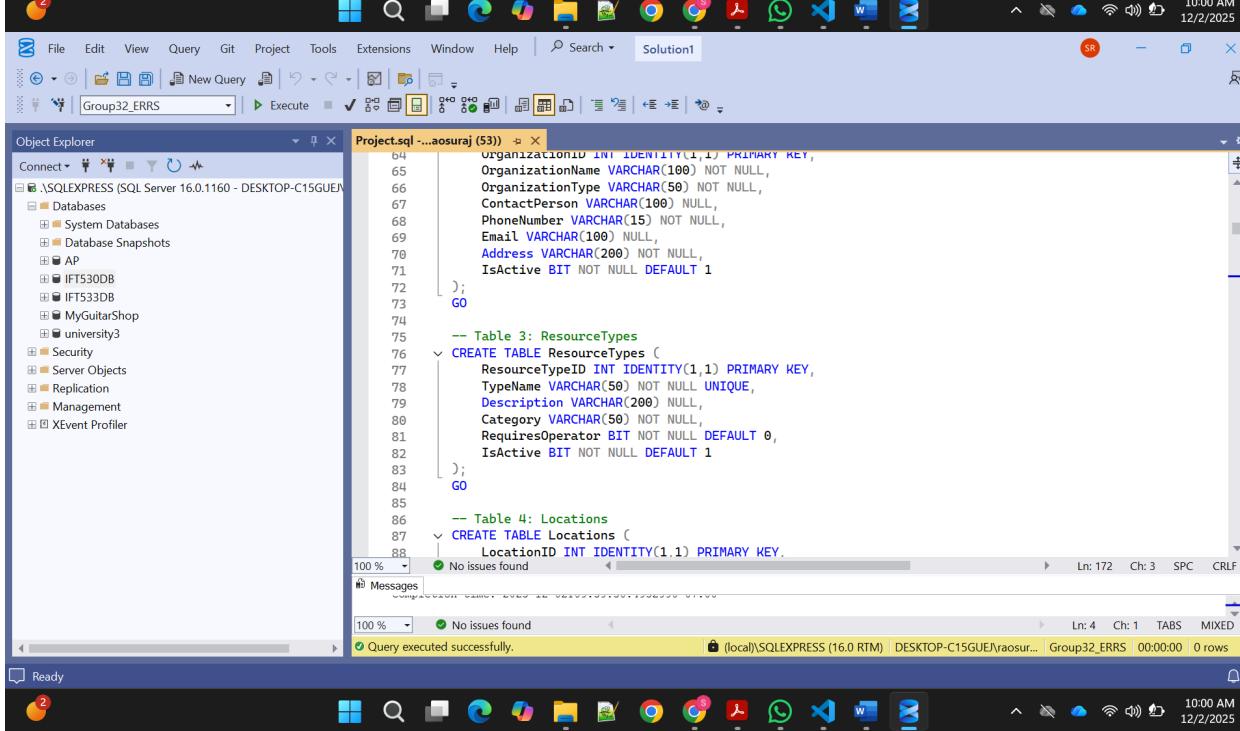
The screenshot shows the SSMS interface with the Object Explorer on the left and the Script pane on the right. The Object Explorer lists several databases, including 'Group32_ERRS'. The Script pane contains the SQL code for creating the 'Hospitals' table:

```

42
43  =====
44  -- CREATE TABLES
45  =====
46
47  -- Table 1: Hospitals
48  CREATE TABLE Hospitals (
49      HospitalID INT IDENTITY(1,1) PRIMARY KEY,
50      HospitalName VARCHAR(100) NOT NULL,
51      Address VARCHAR(200) NOT NULL,
52      City VARCHAR(50) NOT NULL,
53      State VARCHAR(2) NOT NULL,
54      ZipCode VARCHAR(10) NOT NULL,
55      PhoneNumber VARCHAR(15) NOT NULL,
56      EmergencyContact VARCHAR(15) NULL,
57      TotalBeds INT NULL CHECK (TotalBeds >= 0),
58      IsActive BIT NOT NULL DEFAULT 1
59  );
60  GO
61
62  -- Table 2: Organizations
63  CREATE TABLE Organizations (
64      OrganizationID INT IDENTITY(1,1) PRIMARY KEY,
65      OrganizationName VARCHAR(100) NOT NULL,
66      OrganizationType VARCHAR(50) NOT NULL.
67
68  No issues found

```

The status bar at the bottom indicates "Query executed successfully."



The screenshot shows the SSMS interface with the Object Explorer on the left and the Script pane on the right. The Object Explorer lists several databases, including 'Group32_ERRS'. The Script pane continues the SQL code for creating the 'Organizations' table:

```

64
65  OrganizationID INT IDENTITY(1,1) PRIMARY KEY,
66  OrganizationName VARCHAR(100) NOT NULL,
67  OrganizationType VARCHAR(50) NOT NULL,
68  ContactPerson VARCHAR(100) NULL,
69  PhoneNumber VARCHAR(15) NOT NULL,
70  Email VARCHAR(100) NULL,
71  Address VARCHAR(200) NOT NULL,
72  IsActive BIT NOT NULL DEFAULT 1
73  );
74  GO
75
76  -- Table 3: ResourceTypes
77  CREATE TABLE ResourceTypes (
78      ResourceTypeID INT IDENTITY(1,1) PRIMARY KEY,
79      TypeName VARCHAR(50) NOT NULL UNIQUE,
80      Description VARCHAR(200) NULL,
81      Category VARCHAR(50) NOT NULL,
82      RequiresOperator BIT NOT NULL DEFAULT 0,
83      IsActive BIT NOT NULL DEFAULT 1
84  );
85  GO
86
87  -- Table 4: Locations
88  CREATE TABLE Locations (
89      LocationID INT IDENTITY(1,1) PRIMARY KEY.
90
91  No issues found

```

The status bar at the bottom indicates "Query executed successfully."

SQl Server Management Studio

Object Explorer

Project.sql ...aosuraj (53) ▾

```
89     LocationName VARCHAR(100) NOT NULL,
90     Latitude DECIMAL(9,6) NULL,
91     Longitude DECIMAL(9,6) NULL,
92     City VARCHAR(50) NOT NULL,
93     ZipCode VARCHAR(10) NULL,
94     Description VARCHAR(200) NULL
95 );
96 GO
97
98 -- Table 5: Staff
99 CREATE TABLE Staff (
100    StaffID INT IDENTITY(1,1) PRIMARY KEY,
101    FirstName VARCHAR(50) NOT NULL,
102    LastName VARCHAR(50) NOT NULL,
103    Email VARCHAR(100) NOT NULL UNIQUE,
104    PhoneNumber VARCHAR(15) NULL,
105    Role VARCHAR(50) NOT NULL,
106    HospitalID INT NULL,
107    OrganizationID INT NULL,
108    IsActive BIT NOT NULL DEFAULT 1,
109    CreatedDate DATETIME NOT NULL DEFAULT GETDATE(),
110    CONSTRAINT FK_Staff_Hospital FOREIGN KEY (HospitalID) REFERENCES Hospitals(HospitalID),
111    CONSTRAINT FK_Staff_Organization FOREIGN KEY (OrganizationID) REFERENCES Organizations(OrganizationID)
112 );
113 GO
```

No issues found

Ln: 172 Ch: 3 SPC CRLF

Messages

No issues found

Query executed successfully.

(local)\SQLEXPRESS (16.0 RTM) | DESKTOP-C15GUE\aosuraj | Group32_ERRS | 00:00:00 | 0 rows

SQl Server Management Studio

Object Explorer

Project.sql ...aosuraj (53) ▾

```
114
115 -- Table 6: Resources (Transactional)
116 CREATE TABLE Resources (
117    ResourceID INT IDENTITY(1,1) PRIMARY KEY,
118    ResourceTypeID INT NOT NULL,
119    ResourceName VARCHAR(100) NOT NULL,
120    SerialNumber VARCHAR(50) NULL UNIQUE,
121    HospitalID INT NULL,
122    OrganizationID INT NULL,
123    LocationID INT NOT NULL,
124    Status VARCHAR(20) NOT NULL DEFAULT 'Available',
125    Condition VARCHAR(20) NOT NULL DEFAULT 'Good',
126    LastMaintenanceDate DATE NULL,
127    PurchaseDate DATE NULL,
128    IsActive BIT NOT NULL DEFAULT 1,
129    CONSTRAINT FK_Resources_ResourceType FOREIGN KEY (ResourceTypeID) REFERENCES ResourceTypes(ResourceTypeID),
130    CONSTRAINT FK_Resources_Hospital FOREIGN KEY (HospitalID) REFERENCES Hospitals(HospitalID),
131    CONSTRAINT FK_Resources_Organization FOREIGN KEY (OrganizationID) REFERENCES Organizations(OrganizationID),
132    CONSTRAINT FK_Resources_Location FOREIGN KEY (LocationID) REFERENCES Locations(LocationID),
133    CONSTRAINT CHK_Resources_Status CHECK (Status IN ('Available', 'In Use', 'Maintenance', 'Out of Service')),
134    CONSTRAINT CHK_Resources_Condition CHECK (Condition IN ('Good', 'Fair', 'Poor'))
135 );
136 GO
137
138 -- Table 7: Reservations (Transactional)
```

No issues found

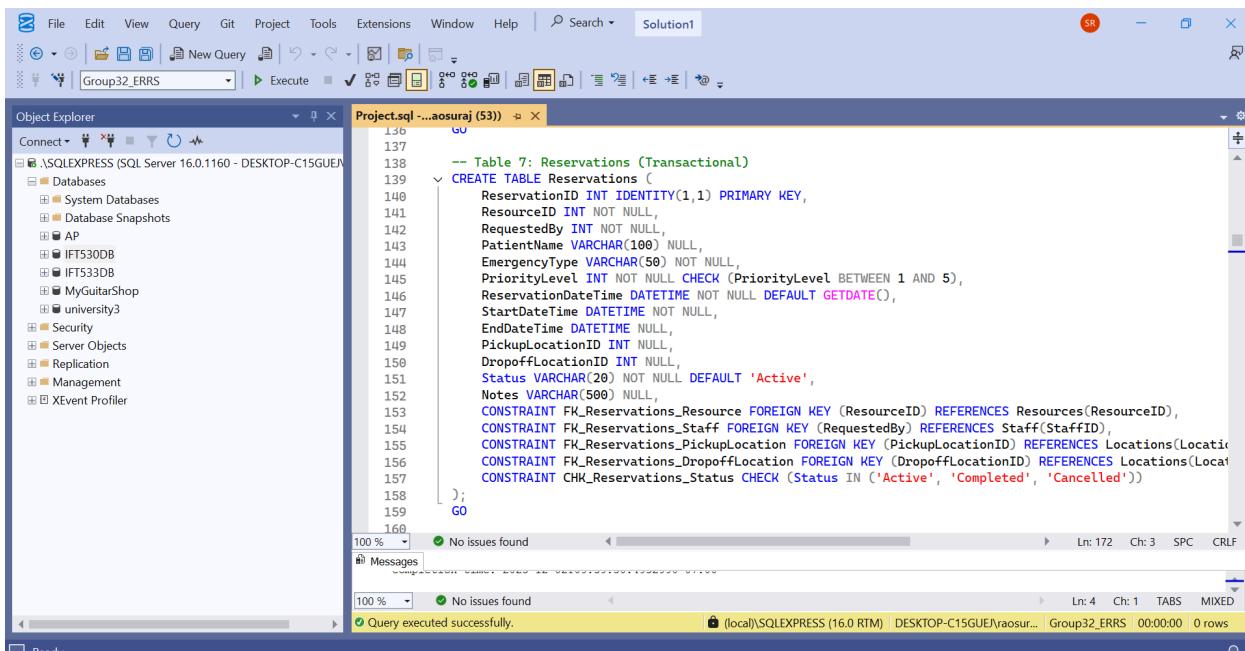
Ln: 172 Ch: 3 SPC CRLF

Messages

No issues found

Query executed successfully.

(local)\SQLEXPRESS (16.0 RTM) | DESKTOP-C15GUE\aosuraj | Group32_ERRS | 00:00:00 | 0 rows



The screenshot shows the Object Explorer on the left and the Script pane on the right. The script pane contains the SQL code for creating the Reservations table, which includes columns for ReservationID, ResourceID, RequestedBy, PatientName, EmergencyType, PriorityLevel, ReservationDateTime, StartDateTime, EndDateTime, PickupLocationID, DropoffLocationID, Status, and Notes. It also includes several foreign key constraints and a CHECK constraint for the Status column.

```

-- Table 7: Reservations (Transactional)
CREATE TABLE Reservations (
    ReservationID INT IDENTITY(1,1) PRIMARY KEY,
    ResourceID INT NOT NULL,
    RequestedBy INT NOT NULL,
    PatientName VARCHAR(100) NULL,
    EmergencyType VARCHAR(50) NOT NULL,
    PriorityLevel INT NOT NULL CHECK (PriorityLevel BETWEEN 1 AND 5),
    ReservationDateTime DATETIME NOT NULL DEFAULT GETDATE(),
    StartDateTime DATETIME NOT NULL,
    EndDateTime DATETIME NULL,
    PickupLocationID INT NULL,
    DropoffLocationID INT NULL,
    Status VARCHAR(20) NOT NULL DEFAULT 'Active',
    Notes VARCHAR(500) NULL,
    CONSTRAINT FK_Reservations_Resource FOREIGN KEY (ResourceID) REFERENCES Resources(ResourceID),
    CONSTRAINT FK_Reservations_Staff FOREIGN KEY (RequestedBy) REFERENCES Staff(StaffID),
    CONSTRAINT FK_Reservations_PickupLocation FOREIGN KEY (PickupLocationID) REFERENCES Locations(LocationID),
    CONSTRAINT FK_Reservations_DropoffLocation FOREIGN KEY (DropoffLocationID) REFERENCES Locations(LocationID),
    CONSTRAINT CHK_Reservations_Status CHECK (Status IN ('Active', 'Completed', 'Cancelled'))
);
GO

```

Object Explorer:

- \SQLExpress (SQL Server 16.0.1160 - DESKTOP-C15GUE)
- Databases
 - System Databases
 - Database Snapshots
 - AP
 - IFT530DB
 - IFT53DB
 - MyGuitarShop
 - university3
- Security
- Server Objects
- Replication
- Management
- XEvent Profiler

Script Pane:

```

-- Table 8: ResourceAudit (Audit Table)
CREATE TABLE ResourceAudit (
    AuditID INT IDENTITY(1,1) PRIMARY KEY,
    ResourceTypeID INT NOT NULL,
    TypeName VARCHAR(50) NOT NULL,
    Description VARCHAR(200) NULL,
    Category VARCHAR(50) NOT NULL,
    Operation VARCHAR(10) NOT NULL,
    ModifiedBy VARCHAR(100) NULL,
    ModifiedDate DATETIME NOT NULL DEFAULT GETDATE()
);
GO

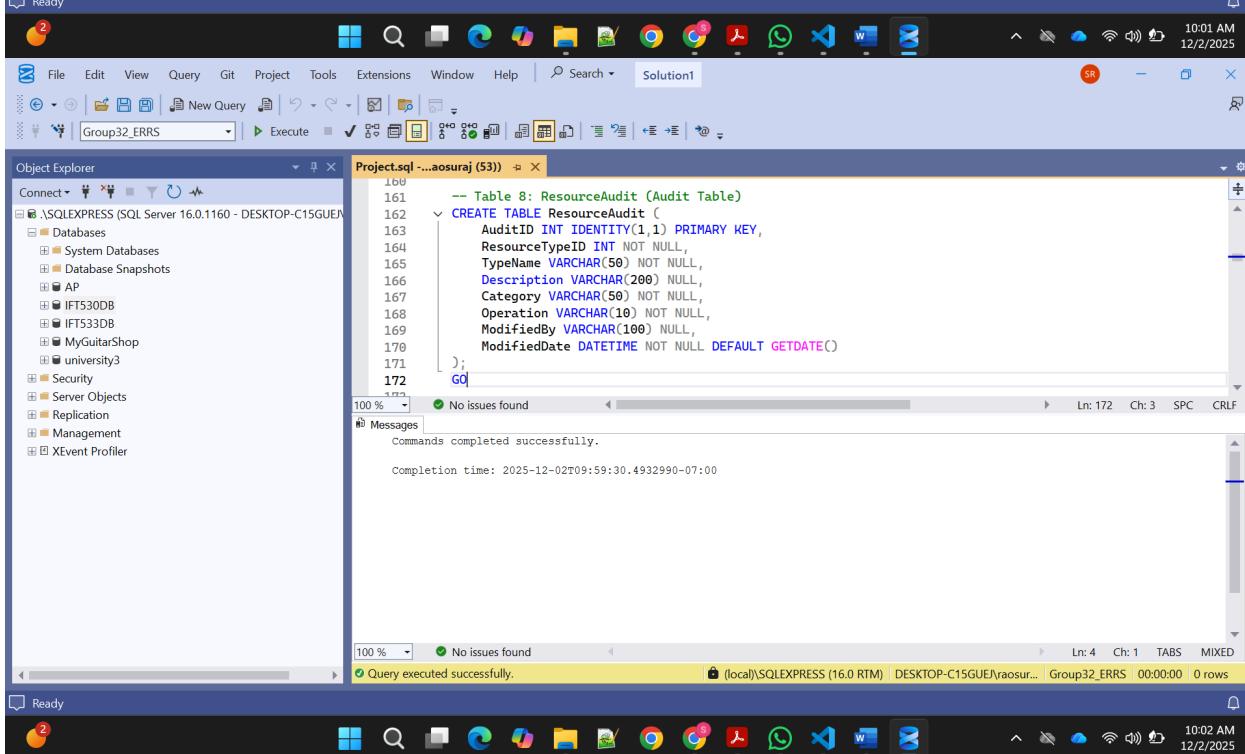
```

Messages:

No issues found

Query executed successfully.

Completion time: 2025-12-02T09:59:30.4932990-07:00



The screenshot shows the Object Explorer on the left and the Script pane on the right. The script pane contains the SQL code for creating the ResourceAudit table, which includes columns for AuditID, ResourceTypeID, TypeName, Description, Category, Operation, ModifiedBy, and ModifiedDate. It uses an identity column for AuditID and includes a primary key constraint.

This section defines all tables required in the ERRS system, including primary keys, foreign keys, constraints, and default values. The structure supports safe transactions, auditability, and precise linking of all resource-related data.

4. Data Population

Code :

```
-- =====
-- POPULATE TABLES
-- =====
```

-- Hospitals (10 rows)

INSERT INTO Hospitals (HospitalName, Address, City, State, ZipCode, PhoneNumber, EmergencyContact, TotalBeds, IsActive)

VALUES

('Phoenix General Hospital', '1234 Main St', 'Phoenix', 'AZ', '85001', '602-555-0001', '602-555-0101', 250, 1),
('Tempe Medical Center', '5678 University Dr', 'Tempe', 'AZ', '85281', '480-555-0002', '480-555-0102', 180, 1),
('Scottsdale Memorial Hospital', '9101 E Shea Blvd', 'Scottsdale', 'AZ', '85260', '480-555-0003', '480-555-0103', 320, 1),
('Mesa Regional Medical', '2345 S Dobson Rd', 'Mesa', 'AZ', '85202', '480-555-0004', '480-555-0104', 200, 1),
('Chandler Community Hospital', '3456 W Chandler Blvd', 'Chandler', 'AZ', '85226', '480-555-0005', '480-555-0105', 150, 1),
('Gilbert Healthcare Center', '4567 E Baseline Rd', 'Gilbert', 'AZ', '85234', '480-555-0006', '480-555-0106', 175, 1),
('Glendale Memorial Hospital', '5678 W Glendale Ave', 'Glendale', 'AZ', '85301', '623-555-0007', '623-555-0107', 220, 1),
('Peoria Health Center', '6789 N 83rd Ave', 'Peoria', 'AZ', '85345', '623-555-0008', '623-555-0108', 160, 1),
('Surprise Medical Center', '7890 W Bell Rd', 'Surprise', 'AZ', '85374', '623-555-0009', '623-555-0109', 140, 1),
('Tucson General Hospital', '8901 E Broadway', 'Tucson', 'AZ', '85710', '520-555-0010', '520-555-0110', 280, 1);

GO

-- Organizations (10 rows)

INSERT INTO Organizations (OrganizationName, OrganizationType, ContactPerson, PhoneNumber, Email, Address, IsActive)

VALUES

('Arizona Red Cross', 'NGO', 'John Smith', '602-555-1001', 'contact@azredcross.org', '1000 N Central Ave, Phoenix, AZ 85004', 1),
('Phoenix Fire Department', 'Fire Department', 'Sarah Johnson', '602-555-1002', 'info@phoenixfire.gov', '150 S 12th St, Phoenix, AZ 85034', 1),
('Southwest Ambulance Services', 'Private EMS', 'Michael Brown', '480-555-1003', 'dispatch@swambulance.com', '2500 E University Dr, Tempe, AZ 85281', 1),
('Arizona Emergency Response Team', 'Emergency Response', 'Emily Davis', '602-555-1004', 'info@azert.org', '3000 N 24th St, Phoenix, AZ 85016', 1),

('Valley Metro EMS', 'Public EMS', 'Robert Wilson', '480-555-1005', 'ems@valleymetro.org', '101 N 1st Ave, Phoenix, AZ 85003', 1),

('Disaster Relief Arizona', 'NGO', 'Jennifer Martinez', '602-555-1006', 'help@disasterreliefaz.org', '4500 E Van Buren St, Phoenix, AZ 85008', 1),

('Maricopa Emergency Services', 'County Agency', 'David Anderson', '602-555-1007', 'emergency@maricopa.gov', '301 W Jefferson St, Phoenix, AZ 85003', 1),

('Life Link Air Ambulance', 'Air Ambulance', 'Lisa Thompson', '480-555-1008', 'dispatch@lifelink.com', '5000 E Sky Harbor Blvd, Phoenix, AZ 85034', 1),

('Community Health Response', 'NGO', 'James Garcia', '602-555-1009', 'info@chr.org', '6000 N 7th St, Phoenix, AZ 85014', 1),

('Arizona Medical Transport', 'Medical Transport', 'Patricia Rodriguez', '480-555-1010', 'service@azmedtrans.com', '7000 E McDowell Rd, Scottsdale, AZ 85257', 1);

GO

-- ResourceTypes (10 rows)

INSERT INTO ResourceTypes (TypeName, Description, Category, RequiresOperator, IsActive)

VALUES

('Ambulance', 'Emergency medical transport vehicle', 'Vehicle', 1, 1),

('ICU Bed', 'Intensive Care Unit bed with monitoring equipment', 'Bed', 0, 1),

('Oxygen Cylinder', 'Portable oxygen supply', 'Equipment', 0, 1),

('Ventilator', 'Mechanical breathing assistance device', 'Equipment', 1, 1),

('Defibrillator', 'Emergency cardiac response equipment', 'Equipment', 1, 1),

('Wheelchair', 'Patient mobility assistance', 'Equipment', 0, 1),

('Stretcher', 'Patient transport bed', 'Equipment', 0, 1),

('Emergency Room Bed', 'Standard emergency department bed', 'Bed', 0, 1),

('Mobile X-Ray Unit', 'Portable diagnostic imaging equipment', 'Equipment', 1, 1),

('Medical Helicopter', 'Air ambulance for critical transport', 'Vehicle', 1, 1);

GO

-- Locations (10 rows)

```
INSERT INTO Locations (LocationName, Latitude, Longitude, City, ZipCode, Description)
```

```
VALUES
```

```
('Downtown Phoenix', 33.448376, -112.074036, 'Phoenix', '85004', 'Central business district'),  
('Tempe Campus Area', 33.425510, -111.940005, 'Tempe', '85281', 'ASU area and surrounding'),  
('North Scottsdale', 33.620370, -111.876534, 'Scottsdale', '85260', 'North Scottsdale region'),  
('East Mesa', 33.422062, -111.583009, 'Mesa', '85202', 'Eastern Mesa area'),  
('West Chandler', 33.306160, -111.941288, 'Chandler', '85226', 'West Chandler district'),  
('Gilbert Downtown', 33.352933, -111.789023, 'Gilbert', '85234', 'Gilbert town center'),  
('West Glendale', 33.538651, -112.186438, 'Glendale', '85301', 'West Valley area'),  
('Peoria Sports Complex', 33.631294, -112.241866, 'Peoria', '85345', 'North Peoria region'),  
('Surprise Stadium Area', 33.630210, -112.365158, 'Surprise', '85374', 'Northwest Valley'),  
('Central Tucson', 32.221743, -110.926479, 'Tucson', '85710', 'Tucson metropolitan area');
```

```
GO
```

```
-- Staff (10 rows)
```

```
INSERT INTO Staff (FirstName, LastName, Email, PhoneNumber, Role, HospitalID, OrganizationID, IsActive)
```

```
VALUES
```

```
('Alice', 'Johnson', 'alice.johnson@phoenixgeneral.com', '602-555-2001', 'Administrator', 1, NULL, 1),  
('Bob', 'Williams', 'bob.williams@tempemedical.com', '480-555-2002', 'Coordinator', 2, NULL, 1),  
('Carol', 'Martinez', 'carol.martinez@scottsdalehealth.com', '480-555-2003', 'Coordinator', 3, NULL, 1),  
('David', 'Brown', 'david.brown@azredcross.org', '602-555-2004', 'Coordinator', NULL, 1, 1),  
('Emma', 'Davis', 'emma.davis@phoenixfire.gov', '602-555-2005', 'Administrator', NULL, 2, 1),  
('Frank', 'Miller', 'frank.miller@swambulance.com', '480-555-2006', 'Coordinator', NULL, 3, 1),  
('Grace', 'Wilson', 'grace.wilson@mesaregional.com', '480-555-2007', 'Viewer', 4, NULL, 1),  
('Henry', 'Moore', 'henry.moore@chandlerhospital.com', '480-555-2008', 'Coordinator', 5, NULL, 1),  
('Iris', 'Taylor', 'iris.taylor@azert.org', '602-555-2009', 'Administrator', NULL, 4, 1),  
('Jack', 'Anderson', 'jack.anderson@gilberthealth.com', '480-555-2010', 'Viewer', 6, NULL, 1);
```

GO

-- Resources (30 rows)

INSERT INTO Resources (ResourceTypeID, ResourceName, SerialNumber, HospitalID, OrganizationID, LocationID, Status, Condition, LastMaintenanceDate, PurchaseDate, IsActive)

VALUES

(1, 'Ambulance-PH-001', 'AMB001', 1, NULL, 1, 'Available', 'Good', '2025-10-15', '2023-01-10', 1),
(1, 'Ambulance-PH-002', 'AMB002', 1, NULL, 1, 'In Use', 'Good', '2025-10-20', '2023-02-15', 1),
(1, 'Ambulance-TM-001', 'AMB003', 2, NULL, 2, 'Available', 'Good', '2025-11-01', '2023-03-20', 1),
(1, 'Ambulance-SC-001', 'AMB004', 3, NULL, 3, 'Maintenance', 'Fair', '2025-09-10', '2022-12-05', 1),
(1, 'Ambulance-SW-001', 'AMB005', NULL, 3, 2, 'Available', 'Good', '2025-11-05', '2024-01-15', 1),
(2, 'ICU-Bed-PH-101', 'ICU101', 1, NULL, 1, 'Available', 'Good', NULL, '2023-01-01', 1),
(2, 'ICU-Bed-PH-102', 'ICU102', 1, NULL, 1, 'In Use', 'Good', NULL, '2023-01-01', 1),
(2, 'ICU-Bed-PH-103', 'ICU103', 1, NULL, 1, 'In Use', 'Good', NULL, '2023-01-01', 1),
(2, 'ICU-Bed-TM-101', 'ICU104', 2, NULL, 2, 'Available', 'Good', NULL, '2023-02-01', 1),
(2, 'ICU-Bed-TM-102', 'ICU105', 2, NULL, 2, 'In Use', 'Fair', NULL, '2023-02-01', 1),
(2, 'ICU-Bed-SC-101', 'ICU106', 3, NULL, 3, 'Available', 'Good', NULL, '2023-03-01', 1),
(2, 'ICU-Bed-MS-101', 'ICU107', 4, NULL, 4, 'Available', 'Good', NULL, '2023-04-01', 1),
(3, 'Oxygen-PH-001', 'OXY001', 1, NULL, 1, 'Available', 'Good', '2025-10-01', '2024-01-01', 1),
(3, 'Oxygen-PH-002', 'OXY002', 1, NULL, 1, 'Available', 'Good', '2025-10-01', '2024-01-01', 1),
(3, 'Oxygen-TM-001', 'OXY003', 2, NULL, 2, 'In Use', 'Good', '2025-10-15', '2024-02-01', 1),
(3, 'Oxygen-SC-001', 'OXY004', 3, NULL, 3, 'Available', 'Good', '2025-11-01', '2024-03-01', 1),
(4, 'Ventilator-PH-001', 'VENT001', 1, NULL, 1, 'Available', 'Good', '2025-09-15', '2023-06-01', 1),
(4, 'Ventilator-PH-002', 'VENT002', 1, NULL, 1, 'In Use', 'Good', '2025-09-20', '2023-06-01', 1),
(4, 'Ventilator-TM-001', 'VENT003', 2, NULL, 2, 'Available', 'Good', '2025-10-01', '2023-07-01', 1),
(4, 'Ventilator-SC-001', 'VENT004', 3, NULL, 3, 'Available', 'Good', '2025-10-10', '2023-08-01', 1),
(5, 'Defibrillator-PH-001', 'DEFIB001', 1, NULL, 1, 'Available', 'Good', '2025-08-01', '2024-01-01', 1),
(5, 'Defibrillator-TM-001', 'DEFIB002', 2, NULL, 2, 'Available', 'Good', '2025-08-15', '2024-02-01', 1),

```
(6, 'Wheelchair-PH-001', 'CHAIR001', 1, NULL, 1, 'Available', 'Good', NULL, '2022-01-01', 1),  
(6, 'Wheelchair-PH-002', 'CHAIR002', 1, NULL, 1, 'Available', 'Fair', NULL, '2022-01-01', 1),  
(6, 'Wheelchair-TM-001', 'CHAIR003', 2, NULL, 2, 'Available', 'Good', NULL, '2022-02-01', 1),  
(7, 'Stretcher-PH-001', 'STRCH001', 1, NULL, 1, 'Available', 'Good', NULL, '2023-01-01', 1),  
(7, 'Stretcher-TM-001', 'STRCH002', 2, NULL, 2, 'In Use', 'Good', NULL, '2023-02-01', 1),  
(8, 'ER-Bed-PH-201', 'ER201', 1, NULL, 1, 'Available', 'Good', NULL, '2023-01-01', 1),  
(8, 'ER-Bed-PH-202', 'ER202', 1, NULL, 1, 'In Use', 'Good', NULL, '2023-01-01', 1),  
(8, 'ER-Bed-TM-201', 'ER203', 2, NULL, 2, 'Available', 'Good', NULL, '2023-02-01', 1);
```

GO

-- Reservations (25 rows)

```
INSERT INTO Reservations (ResourceID, RequestedBy, PatientName, EmergencyType, PriorityLevel,  
ReservationDateTime, StartDateTime, EndDateTime, PickupLocationID, DropoffLocationID, Status, Notes)
```

VALUES

```
(2, 3, 'John Doe', 'Cardiac Emergency', 1, '2025-11-18 08:30:00', '2025-11-18 08:45:00', '2025-11-18 10:30:00', 1, 1,  
'Completed', 'Patient stable after transport'),  
(4, 4, 'Jane Smith', 'Trauma', 2, '2025-11-18 09:15:00', '2025-11-18 09:30:00', NULL, 3, 3, 'Active', 'Vehicle under  
maintenance, reassigned'),  
(15, 2, 'Robert Johnson', 'Respiratory Distress', 1, '2025-11-18 10:00:00', '2025-11-18 10:15:00', NULL, 2, 2, 'Active',  
'Patient on oxygen support'),  
(7, 1, 'Mary Williams', 'Post-Surgery', 3, '2025-11-17 14:00:00', '2025-11-17 14:30:00', NULL, 1, 1, 'Active', 'Extended  
ICU stay required'),  
(8, 3, 'James Brown', 'Heart Attack', 1, '2025-11-17 16:45:00', '2025-11-17 17:00:00', NULL, 1, 1, 'Active', 'Critical  
condition'),  
(10, 2, 'Patricia Davis', 'Stroke', 1, '2025-11-16 20:30:00', '2025-11-16 21:00:00', '2025-11-17 08:00:00', 2, 2, 'Completed',  
'Patient recovered'),  
(18, 5, 'Michael Wilson', 'Pneumonia', 2, '2025-11-16 11:00:00', '2025-11-16 11:30:00', NULL, 1, 1, 'Active', 'Requires  
ventilator support'),  
(27, 3, 'Linda Martinez', 'Fall Injury', 3, '2025-11-15 09:00:00', '2025-11-15 09:20:00', '2025-11-15 12:00:00', 2, 2,  
'Completed', 'Minor fracture treated'),  
(29, 2, 'David Anderson', 'Chest Pain', 2, '2025-11-15 13:30:00', '2025-11-15 14:00:00', NULL, 1, 1, 'Active', 'Under  
observation'),
```

(1, 4, 'Sarah Taylor', 'Motor Vehicle Accident', 1, '2025-11-14 07:15:00', '2025-11-14 07:30:00', '2025-11-14 09:00:00', 1, 3, 'Completed', 'Multiple injuries, transported to trauma center'),

(3, 6, 'Thomas Moore', 'Allergic Reaction', 2, '2025-11-14 15:20:00', '2025-11-14 15:35:00', '2025-11-14 16:30:00', 2, 2, 'Completed', 'Stabilized with epinephrine'),

(5, 4, 'Jennifer Jackson', 'Diabetic Emergency', 2, '2025-11-13 10:45:00', '2025-11-13 11:00:00', '2025-11-13 12:30:00', 2, 1, 'Completed', 'Blood sugar normalized'),

(1, 3, 'Christopher White', 'Burns', 1, '2025-11-13 18:00:00', '2025-11-13 18:15:00', '2025-11-13 19:45:00', 3, 1, 'Completed', 'Second-degree burns treated'),

(2, 8, 'Nancy Harris', 'Seizure', 1, '2025-11-12 22:30:00', '2025-11-12 22:45:00', '2025-11-13 01:00:00', 4, 4, 'Completed', 'Seizure controlled'),

(3, 4, 'Daniel Martin', 'Abdominal Pain', 3, '2025-11-12 14:00:00', '2025-11-12 14:20:00', '2025-11-12 16:00:00', 5, 4, 'Completed', 'Appendicitis diagnosed'),

(5, 6, 'Karen Thompson', 'Broken Leg', 2, '2025-11-11 16:30:00', '2025-11-11 16:50:00', '2025-11-11 18:30:00', 6, 4, 'Completed', 'Fracture set and casted'),

(1, 4, 'Paul Garcia', 'Chest Trauma', 1, '2025-11-11 08:00:00', '2025-11-11 08:15:00', '2025-11-11 10:00:00', 7, 1, 'Completed', 'Internal injuries assessed'),

(3, 3, 'Lisa Rodriguez', 'Asthma Attack', 2, '2025-11-10 19:15:00', '2025-11-10 19:30:00', '2025-11-10 21:00:00', 8, 2, 'Completed', 'Breathing stabilized'),

(2, 2, 'Mark Lee', 'Drug Overdose', 1, '2025-11-10 03:00:00', '2025-11-10 03:15:00', '2025-11-10 06:00:00', 1, 1, 'Completed', 'Narcan administered'),

(5, 4, 'Betty Walker', 'Heat Stroke', 2, '2025-11-09 14:30:00', '2025-11-09 14:50:00', '2025-11-09 16:30:00', 9, 1, 'Completed', 'Cooled and hydrated'),

(1, 6, 'Kevin Hall', 'Gunshot Wound', 1, '2025-11-09 23:45:00', '2025-11-09 23:55:00', '2025-11-10 02:30:00', 1, 1, 'Completed', 'Emergency surgery performed'),

(3, 4, 'Donna Allen', 'Pregnancy Complications', 1, '2025-11-08 12:00:00', '2025-11-08 12:15:00', '2025-11-08 14:00:00', 2, 3, 'Completed', 'Mother and baby stable'),

(2, 3, 'George Young', 'Food Poisoning', 3, '2025-11-08 06:30:00', '2025-11-08 07:00:00', '2025-11-08 10:00:00', 4, 4, 'Completed', 'IV fluids administered'),

(5, 8, 'Sandra King', 'Spinal Injury', 1, '2025-11-07 17:20:00', '2025-11-07 17:35:00', '2025-11-07 20:00:00', 3, 1, 'Completed', 'Immobilized during transport'),

(1, 4, 'Edward Wright', 'Hypothermia', 2, '2025-11-07 02:00:00', '2025-11-07 02:20:00', '2025-11-07 04:30:00', 10, 1, 'Completed', 'Gradual rewarming protocol');

GO

The screenshot shows the SQL Server Management Studio (SSMS) interface. The title bar reads "File Edit View Query Git Project Tools Extensions Window Help | Search Solution1". The Object Explorer on the left shows a connection to "\SQLEXPRESS (SQL Server 16.0.1160 - DESKTOP-C15GUE)". The main area displays a script named "Project.sql" with the following content:

```
194    -- INSERT INTO Organizations (OrganizationName, OrganizationType, ContactPerson, PhoneNumber, Email, Address)
195    VALUES
196    ('Arizona Red Cross', 'NGO', 'John Smith', '602-555-1001', 'contact@azredcross.org', '1000 N Central Ave')
197    ('Phoenix Fire Department', 'Fire Department', 'Sarah Johnson', '602-555-1002', 'info@phoenixfire.gov')
198    ('Southwest Ambulance Services', 'Private EMS', 'Michael Brown', '480-555-1003', 'dispatch@swambulance.com')
199    ('Arizona Emergency Response Team', 'Emergency Response', 'Emily Davis', '602-555-1004', 'info@azert.org')
200    ('Valley Metro EMS', 'Public EMS', 'Robert Wilson', '480-555-1005', 'ems@valleymetro.org', '101 N 1st Ave')
201    ('Disaster Relief Arizona', 'NGO', 'Jennifer Martinez', '602-555-1006', 'help@disasterreliefaz.org', '450 W University St')
202    ('Maricopa Emergency Services', 'County Agency', 'David Anderson', '602-555-1007', 'emergency@maricopa.gov')
203    ('Life Link Air Ambulance', 'Air Ambulance', 'Lisa Thompson', '480-555-1008', 'dispatch@lifelink.com', '1234 Main St')
204    ('Community Health Response', 'NGO', 'James Garcia', '602-555-1009', 'info@chr.org', '6000 N 7th St, Phoenix, AZ')
205    ('Arizona Medical Transport', 'Medical Transport', 'Patricia Rodriguez', '480-555-1010', 'service@azmedt.com')
206    GO
207
208    -- ResourceType (10 rows)
209    INSERT INTO ResourceTypes (TypeName, Description, Category, RequiresOperator, IsActive)
210    VALUES
211    ('Ambulance', 'Emergency medical transport vehicle', 'Vehicle', 1, 1),
212    ('ICU Bed', 'Intensive Care Unit bed with monitoring equipment', 'Bed', 0, 1),
213    ('Oxygen Cylinder', 'Portable oxygen supply', 'Equipment', 0, 1),
214    ('Ventilator', 'Mechanical breathing assistance device', 'Equipment', 1, 1),
215    ('Defibrillator', 'Emergency cardiac response equipment', 'Equipment', 1, 1),
216    ('Wheelchair', 'Patient mobility assistance', 'Equipment', 0, 1),
217    ('Stretcher', 'Patient transport bed', 'Equipment', 0, 1),
218    ('Emergency Room Bed', 'Standard emergency department bed', 'Bed', 0, 1),
```

The status bar at the bottom indicates "Query executed successfully." and "1 row(s) affected".

The screenshot shows the SQL Server Management Studio (SSMS) interface. The title bar reads "File Edit View Query Git Project Tools Extensions Window Help | Search Solution1". The Object Explorer on the left shows a connection to "\SQLEXPRESS (SQL Server 16.0.1160 - DESKTOP-C15GUE)". The main area displays a script named "Project.sql" with the following content:

```
173
174    ====
175    POPULATE TABLES
176    ====
177
178    -- Hospitals (10 rows)
179    INSERT INTO Hospitals (HospitalName, Address, City, State, ZipCode, PhoneNumber, EmergencyContact, TotalBeds)
180    VALUES
181    ('Phoenix General Hospital', '1234 Main St', 'Phoenix', 'AZ', '85001', '602-555-0001', '602-555-0101', 250)
182    ('Tempe Medical Center', '5678 University Dr', 'Tempe', 'AZ', '85281', '480-555-0002', '480-555-0102', 150)
183    ('Scottsdale Memorial Hospital', '9101 E Shea Blvd', 'Scottsdale', 'AZ', '85260', '480-555-0003', '480-555-0103', 200)
184    ('Mesa Regional Medical', '2345 S Dobson Rd', 'Mesa', 'AZ', '85202', '480-555-0004', '480-555-0104', 100)
185    ('Chandler Community Hospital', '3456 W Chandler Blvd', 'Chandler', 'AZ', '85226', '480-555-0005', '480-555-0105', 150)
186    ('Gilbert Healthcare Center', '4567 E Baseline Rd', 'Gilbert', 'AZ', '85234', '480-555-0006', '480-555-0106', 100)
187    ('Glendale Memorial Hospital', '5678 W Glendale Ave', 'Glendale', 'AZ', '85301', '623-555-0007', '623-555-0107', 120)
188    ('Peoria Health Center', '6789 N 83rd Ave', 'Peoria', 'AZ', '85345', '623-555-0008', '623-555-0108', 160)
189    ('Surprise Medical Center', '7890 W Bell Rd', 'Surprise', 'AZ', '85374', '623-555-0009', '623-555-0109', 140)
190    ('Tucson General Hospital', '8901 E Broadway', 'Tucson', 'AZ', '85710', '520-555-0010', '520-555-0110', 200)
191    GO
192
193    -- Organizations (10 rows)
194    INSERT INTO Organizations (OrganizationName, OrganizationType, ContactPerson, PhoneNumber, Email, Address)
195    VALUES
196    ('Arizona Red Cross', 'NGO', 'John Smith', '602-555-1001', 'contact@azredcross.org', '1000 N Central Ave')
197    ('Phoenix Fire Department', 'Fire Department', 'Sarah Johnson', '602-555-1002', 'info@phoenixfire.gov')
198    ('Southwest Ambulance Services', 'Private EMS', 'Michael Brown', '480-555-1003', 'dispatch@swambulance.com')
199    ('Arizona Emergency Response Team', 'Emergency Response', 'Emily Davis', '602-555-1004', 'info@azert.org')
200    ('Valley Metro EMS', 'Public EMS', 'Robert Wilson', '480-555-1005', 'ems@valleymetro.org', '101 N 1st Ave')
201    ('Disaster Relief Arizona', 'NGO', 'Jennifer Martinez', '602-555-1006', 'help@disasterreliefaz.org', '450 W University St')
202    ('Maricopa Emergency Services', 'County Agency', 'David Anderson', '602-555-1007', 'emergency@maricopa.gov')
203    ('Life Link Air Ambulance', 'Air Ambulance', 'Lisa Thompson', '480-555-1008', 'dispatch@lifelink.com', '1234 Main St')
204    ('Community Health Response', 'NGO', 'James Garcia', '602-555-1009', 'info@chr.org', '6000 N 7th St, Phoenix, AZ')
205    ('Arizona Medical Transport', 'Medical Transport', 'Patricia Rodriguez', '480-555-1010', 'service@azmedt.com')
206    GO
```

The status bar at the bottom indicates "Commands completed successfully." and "0 rows affected".

File Edit View Query Git Project Tools Extensions Window Help | Search | Solution1

Object Explorer

Connect | New Query | Execute | Search | Object Explorer | Solution1 |

Project.sql ...aosuraj (53) | x

```
218 ('Emergency Room Bed', 'Standard emergency department bed', 'Bed', 0, 1),
219 ('Mobile X-Ray Unit', 'Portable diagnostic imaging equipment', 'Equipment', 1, 1),
220 ('Medical Helicopter', 'Air ambulance for critical transport', 'Vehicle', 1, 1);
221 GO
222
223 -- Locations (10 rows)
224 INSERT INTO Locations (LocationName, Latitude, Longitude, City, ZipCode, Description)
225 VALUES
226 ('Downtown Phoenix', 33.448376, -112.074036, 'Phoenix', '85004', 'Central business district'),
227 ('Tempe Campus Area', 33.425510, -111.940065, 'Tempe', '85281', 'ASU area and surrounding'),
228 ('North Scottsdale', 33.620370, -111.876534, 'Scottsdale', '85260', 'North Scottsdale region'),
229 ('East Mesa', 33.422062, -111.583009, 'Mesa', '85202', 'Eastern Mesa area'),
230 ('West Chandler', 33.306160, -111.941288, 'Chandler', '85226', 'West Chandler district'),
231 ('Gilbert Downtown', 33.352933, -111.789023, 'Gilbert', '85234', 'Gilbert town center'),
232 ('West Glendale', 33.538651, -112.186438, 'Glendale', '85301', 'West Valley area'),
233 ('Peoria Sports Complex', 33.631294, -112.241866, 'Peoria', '85345', 'North Peoria region'),
234 ('Surprise Stadium Area', 33.630210, -112.365158, 'Surprise', '85374', 'Northwest Valley'),
235 ('Central Tucson', 32.221743, -110.926479, 'Tucson', '85710', 'Tucson metropolitan area');
236 GO
237
238 -- Staff (10 rows)
239 INSERT INTO Staff (FirstName, LastName, Email, PhoneNumber, Role, HospitalID, OrganizationID, IsActive)
240 VALUES
241 ('Alice', 'Johnson', 'alice.johnson@phoenixgeneral.com', '602-555-2001', 'Administrator', 1, NULL, 1),
242 ('Bob', 'Williams', 'bob.williams@tempemedical.com', '480-555-2002', 'Coordinator', 2, NULL, 1),
243 ('Carol', 'Martinez', 'carol.martinez@scottsdalehealth.com', '480-555-2003', 'Coordinator', 3, NULL, 1),
244 ('David', 'Brown', 'david.brown@azredcross.org', '602-555-2004', 'Coordinator', NULL, 1, 1),
245 ('Emma', 'Davis', 'emma.davis@phoenixfire.gov', '602-555-2005', 'Administrator', NULL, 2, 1),
246 ('Frank', 'Miller', 'frank.miller@swambulance.com', '480-555-2006', 'Coordinator', NULL, 3, 1),
247 ('Grace', 'Wilson', 'grace.wilson@mesaregional.com', '480-555-2007', 'Viewer', 4, NULL, 1),
248 ('Henry', 'Moore', 'henry.moore@chandlerhospital.com', '480-555-2008', 'Coordinator', 5, NULL, 1),
249 ('Iris', 'Taylor', 'iris.taylor@azert.org', '602-555-2009', 'Administrator', NULL, 4, 1),
250 ('Jack', 'Anderson', 'jack.anderson@gilberthhealth.com', '480-555-2010', 'Viewer', 6, NULL, 1);
251 GO
252
253 -- Resources (30 rows)
254 INSERT INTO Resources (ResourceTypeID, ResourceName, SerialNumber, HospitalID, OrganizationID, LocationID)
255 VALUES
256 (1, 'Ambulance-PH-001', 'AMB001', 1, NULL, 1, 'Available', 'Good', '2025-10-15', '2023-01-10', 1),
257 (1, 'Ambulance-PH-002', 'AMB002', 1, NULL, 1, 'In Use', 'Good', '2025-10-20', '2023-02-15', 1),
258 (1, 'Ambulance-TM-001', 'AMB003', 2, NULL, 2, 'Available', 'Good', '2025-11-01', '2023-03-20', 1),
259 (1, 'Ambulance-SC-001', 'AMB004', 3, NULL, 3, 'Maintenance', 'Fair', '2025-09-10', '2022-12-05', 1),
260 (1, 'Ambulance-SW-001', 'AMB005', NULL, 3, 2, 'Available', 'Good', '2025-11-05', '2024-01-15', 1),
261 (2, 'ICU-Bed-PH-101', 'ICU101', 1, NULL, 1, 'Available', 'Good', NULL, '2023-01-01', 1),
262 (2, 'ICU-Bed-PH-102', 'ICU102', 1, NULL, 1, 'In Use', 'Good', NULL, '2023-01-01', 1),
263 (2, 'ICU-Bed-PH-103', 'ICU103', 1, NULL, 1, 'In Use', 'Good', NULL, '2023-01-01', 1),
264 (2, 'ICU-Bed-TM-101', 'ICU104', 2, NULL, 2, 'Available', 'Good', NULL, '2023-02-01', 1),
265 (2, 'ICU-Bed-TM-102', 'ICU105', 2, NULL, 2, 'In Use', 'Fair', NULL, '2023-02-01', 1),
266 (2, 'ICU-Bed-SC-101', 'ICU106', 3, NULL, 3, 'Available', 'Good', NULL, '2023-03-01', 1),
267 (2, 'ICU-Bed-SC-102', 'ICU107', 4, NULL, 4, 'Available', 'Good', NULL, '2023-04-01', 1),
```

No issues found | Messages | 100 % | No issues found | 100 % | L: 324 Ch: 8 SPC CRLF

Query executed successfully. | (local)\SQLEXPRESS (16.0 RTM) | DESKTOP-C15GUE\aosuraj | Group32_ERRS | 00:00:00 | 0 rows

File Edit View Query Git Project Tools Extensions Window Help | Search | Solution1

Object Explorer

Connect | New Query | Execute | Search | Object Explorer | Solution1 |

Project.sql ...aosuraj (53) | x

```
243 ('Carol', 'Martinez', 'carol.martinez@scottsdalehealth.com', '480-555-2003', 'Coordinator', 3, NULL, 1),
244 ('David', 'Brown', 'david.brown@azredcross.org', '602-555-2004', 'Coordinator', NULL, 1, 1),
245 ('Emma', 'Davis', 'emma.davis@phoenixfire.gov', '602-555-2005', 'Administrator', NULL, 2, 1),
246 ('Frank', 'Miller', 'frank.miller@swambulance.com', '480-555-2006', 'Coordinator', NULL, 3, 1),
247 ('Grace', 'Wilson', 'grace.wilson@mesaregional.com', '480-555-2007', 'Viewer', 4, NULL, 1),
248 ('Henry', 'Moore', 'henry.moore@chandlerhospital.com', '480-555-2008', 'Coordinator', 5, NULL, 1),
249 ('Iris', 'Taylor', 'iris.taylor@azert.org', '602-555-2009', 'Administrator', NULL, 4, 1),
250 ('Jack', 'Anderson', 'jack.anderson@gilberthhealth.com', '480-555-2010', 'Viewer', 6, NULL, 1);
251 GO
252
253 -- Resources (30 rows)
254 INSERT INTO Resources (ResourceTypeID, ResourceName, SerialNumber, HospitalID, OrganizationID, LocationID)
255 VALUES
256 (1, 'Ambulance-PH-001', 'AMB001', 1, NULL, 1, 'Available', 'Good', '2025-10-15', '2023-01-10', 1),
257 (1, 'Ambulance-PH-002', 'AMB002', 1, NULL, 1, 'In Use', 'Good', '2025-10-20', '2023-02-15', 1),
258 (1, 'Ambulance-TM-001', 'AMB003', 2, NULL, 2, 'Available', 'Good', '2025-11-01', '2023-03-20', 1),
259 (1, 'Ambulance-SC-001', 'AMB004', 3, NULL, 3, 'Maintenance', 'Fair', '2025-09-10', '2022-12-05', 1),
260 (1, 'Ambulance-SW-001', 'AMB005', NULL, 3, 2, 'Available', 'Good', '2025-11-05', '2024-01-15', 1),
261 (2, 'ICU-Bed-PH-101', 'ICU101', 1, NULL, 1, 'Available', 'Good', NULL, '2023-01-01', 1),
262 (2, 'ICU-Bed-PH-102', 'ICU102', 1, NULL, 1, 'In Use', 'Good', NULL, '2023-01-01', 1),
263 (2, 'ICU-Bed-PH-103', 'ICU103', 1, NULL, 1, 'In Use', 'Good', NULL, '2023-01-01', 1),
264 (2, 'ICU-Bed-TM-101', 'ICU104', 2, NULL, 2, 'Available', 'Good', NULL, '2023-02-01', 1),
265 (2, 'ICU-Bed-TM-102', 'ICU105', 2, NULL, 2, 'In Use', 'Fair', NULL, '2023-02-01', 1),
266 (2, 'ICU-Bed-SC-101', 'ICU106', 3, NULL, 3, 'Available', 'Good', NULL, '2023-03-01', 1),
267 (2, 'ICU-Bed-SC-102', 'ICU107', 4, NULL, 4, 'Available', 'Good', NULL, '2023-04-01', 1),
```

No issues found | Messages | 100 % | No issues found | 100 % | L: 324 Ch: 8 SPC CRLF

Query executed successfully. | (local)\SQLEXPRESS (16.0 RTM) | DESKTOP-C15GUE\aosuraj | Group32_ERRS | 00:00:00 | 0 rows

File Edit View Query Git Project Tools Extensions Window Help | Search | Solution1

Object Explorer

Connect | New Query | Execute | Solution1

Project.sql ...aosuraj (53) | x

```

263 (2, 'ICU-Bed-PH-103', 'ICU103', 1, NULL, 1, 'In Use', 'Good', NULL, '2023-01-01', 1),
264 (2, 'ICU-Bed-TM-101', 'ICU104', 2, NULL, 2, 'Available', 'Good', NULL, '2023-02-01', 1),
265 (2, 'ICU-Bed-TM-102', 'ICU105', 2, NULL, 2, 'In Use', 'Fair', NULL, '2023-02-01', 1),
266 (2, 'ICU-Bed-SC-101', 'ICU106', 3, NULL, 3, 'Available', 'Good', NULL, '2023-03-01', 1),
267 (2, 'ICU-Bed-MS-101', 'ICU107', 4, NULL, 4, 'Available', 'Good', NULL, '2023-04-01', 1),
268 (3, 'Oxygen-PH-001', 'OXY001', 1, NULL, 1, 'Available', 'Good', '2025-10-01', '2024-01-01', 1),
269 (3, 'Oxygen-PH-002', 'OXY002', 1, NULL, 1, 'Available', 'Good', '2025-10-01', '2024-01-01', 1),
270 (3, 'Oxygen-TM-001', 'OXY003', 2, NULL, 2, 'In Use', 'Good', '2025-10-15', '2024-02-01', 1),
271 (3, 'Oxygen-SC-001', 'OXY004', 3, NULL, 3, 'Available', 'Good', '2025-11-01', '2024-03-01', 1),
272 (4, 'Ventilator-PH-001', 'VENT001', 1, NULL, 1, 'Available', 'Good', '2025-09-15', '2023-06-01', 1),
273 (4, 'Ventilator-PH-002', 'VENT002', 1, NULL, 1, 'In Use', 'Good', '2025-09-20', '2023-06-01', 1),
274 (4, 'Ventilator-TM-001', 'VENT003', 2, NULL, 2, 'Available', 'Good', '2025-10-01', '2023-07-01', 1),
275 (4, 'Ventilator-SC-001', 'VENT004', 3, NULL, 3, 'Available', 'Good', '2025-10-10', '2023-08-01', 1),
276 (5, 'Defibrillator-PH-001', 'DEFIB001', 1, NULL, 1, 'Available', 'Good', '2025-08-01', '2024-01-01', 1),
277 (5, 'Defibrillator-TM-001', 'DEFIB002', 2, NULL, 2, 'Available', 'Good', '2025-08-15', '2024-02-01', 1),
278 (6, 'Wheelchair-PH-001', 'CHAIR001', 1, NULL, 1, 'Available', 'Good', NULL, '2022-01-01', 1),
279 (6, 'Wheelchair-PH-002', 'CHAIR002', 1, NULL, 1, 'Available', 'Fair', NULL, '2022-01-01', 1),
280 (6, 'Wheelchair-TM-001', 'CHAIR003', 2, NULL, 2, 'Available', 'Good', NULL, '2022-02-01', 1),
281 (7, 'Stretcher-PH-001', 'STRCH001', 1, NULL, 1, 'Available', 'Good', NULL, '2023-01-01', 1),
282 (7, 'Stretcher-TM-001', 'STRCH002', 2, NULL, 2, 'In Use', 'Good', NULL, '2023-02-01', 1),
283 (8, 'ER-Bed-PH-201', 'ER201', 1, NULL, 1, 'Available', 'Good', NULL, '2023-01-01', 1),
284 (8, 'ER-Bed-PH-202', 'ER202', 1, NULL, 1, 'In Use', 'Good', NULL, '2023-01-01', 1),
285 (8, 'ER-Bed-TM-201', 'ER203', 2, NULL, 2, 'Available', 'Good', NULL, '2023-02-01', 1);
GO

```

No issues found | Messages | No issues found | Query executed successfully. (local)\SQLEXPRESS (16.0 RTM) DESKTOP-C15GUE\aosur... Group32_ERRS 00:00:00 0 rows

File Edit View Query Git Project Tools Extensions Window Help | Search | Solution1

Object Explorer

Connect | New Query | Execute | Solution1

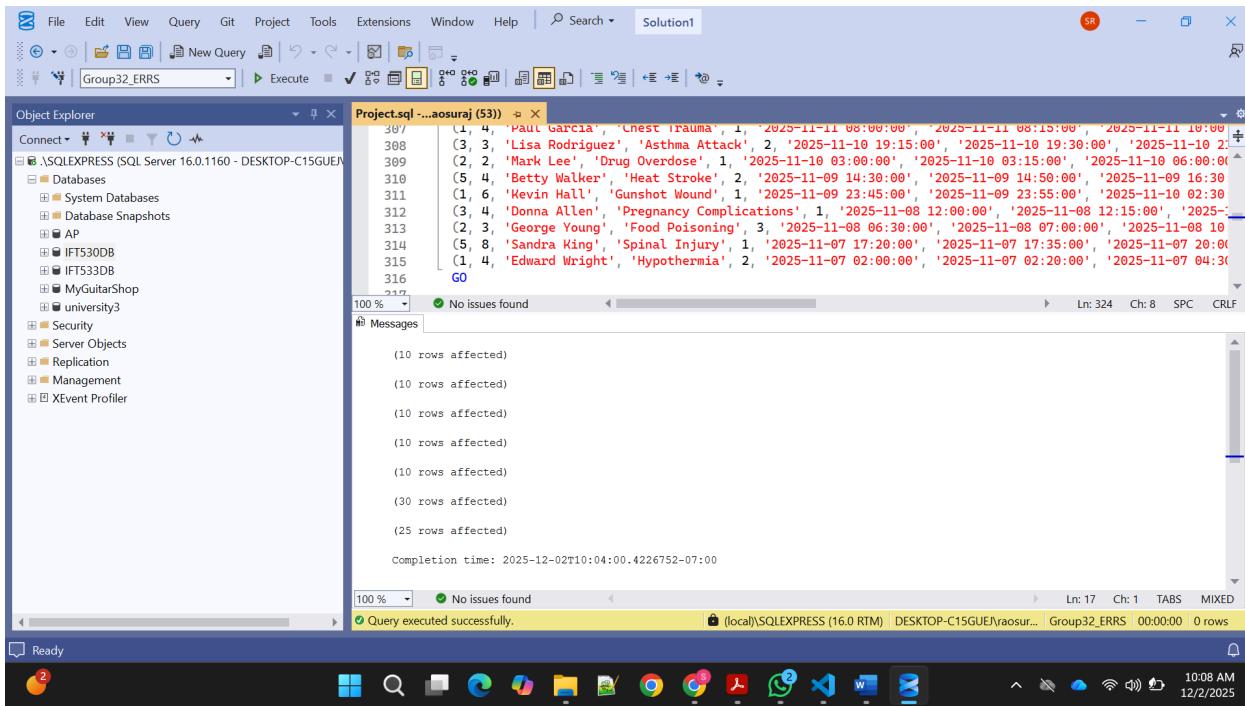
Project.sql ...aosuraj (53) | x

```

288 -- Reservations (25 rows)
289 INSERT INTO Reservations (ResourceId, RequestedBy, PatientName, EmergencyType, PriorityLevel, ReservationDate, Status, LastUpdate)
290 VALUES
291 (2, 3, 'John Doe', 'Cardiac Emergency', 1, '2025-11-18 08:30:00', '2025-11-18 08:45:00', '2025-11-18 10:00:00', 'Available', '2025-11-18 08:45:00', '2025-11-18 10:00:00'),
292 (4, 4, 'Jane Smith', 'Trauma', 2, '2025-11-18 09:15:00', '2025-11-18 09:30:00', NULL, 3, 3, 'Active', '2025-11-18 09:15:00', '2025-11-18 09:30:00'),
293 (15, 2, 'Robert Johnson', 'Respiratory Distress', 1, '2025-11-18 10:00:00', '2025-11-18 10:15:00', NULL, 1, 1, 'Active', '2025-11-18 10:00:00', '2025-11-18 10:15:00'),
294 (7, 1, 'Mary Williams', 'Post-Surgery', 3, '2025-11-17 14:00:00', '2025-11-17 14:30:00', NULL, 1, 1, 'Active', '2025-11-17 14:00:00', '2025-11-17 14:30:00'),
295 (8, 3, 'James Brown', 'Heart Attack', 1, '2025-11-17 16:45:00', '2025-11-17 17:00:00', NULL, 1, 1, 'Active', '2025-11-17 16:45:00', '2025-11-17 17:00:00'),
296 (10, 2, 'Patricia Davis', 'Stroke', 1, '2025-11-16 20:30:00', '2025-11-16 21:00:00', '2025-11-17 08:00:00', NULL, 1, 1, 'Active', '2025-11-16 20:30:00', '2025-11-16 21:00:00'),
297 (18, 5, 'Michael Wilson', 'Pneumonia', 2, '2025-11-16 11:00:00', '2025-11-16 11:30:00', NULL, 1, 1, 'Active', '2025-11-16 11:00:00', '2025-11-16 11:30:00'),
298 (27, 3, 'Linda Martinez', 'Fall Injury', 3, '2025-11-15 09:00:00', '2025-11-15 09:20:00', '2025-11-15 12:00:00', NULL, 1, 1, 'Active', '2025-11-15 09:00:00', '2025-11-15 09:20:00'),
299 (29, 2, 'David Anderson', 'Chest Pain', 2, '2025-11-15 13:30:00', '2025-11-15 14:00:00', NULL, 1, 1, 'Active', '2025-11-15 13:30:00', '2025-11-15 14:00:00'),
300 (1, 4, 'Sarah Taylor', 'Motor Vehicle Accident', 1, '2025-11-14 07:15:00', '2025-11-14 07:30:00', '2025-11-14 07:30:00', NULL, 1, 1, 'Active', '2025-11-14 07:15:00', '2025-11-14 07:30:00'),
301 (3, 6, 'Thomas Moore', 'Allergic Reaction', 2, '2025-11-14 15:20:00', '2025-11-14 15:35:00', '2025-11-14 15:35:00', NULL, 1, 1, 'Active', '2025-11-14 15:20:00', '2025-11-14 15:35:00'),
302 (5, 4, 'Jennifer Jackson', 'Diabetic Emergency', 2, '2025-11-13 10:45:00', '2025-11-13 11:00:00', '2025-11-13 11:00:00', NULL, 1, 1, 'Active', '2025-11-13 10:45:00', '2025-11-13 11:00:00'),
303 (1, 3, 'Christopher White', 'Burns', 1, '2025-11-13 18:00:00', '2025-11-13 18:15:00', '2025-11-13 19:45:00', NULL, 1, 1, 'Active', '2025-11-13 18:00:00', '2025-11-13 18:15:00'),
304 (2, 8, 'Nancy Harris', 'Seizure', 1, '2025-11-12 22:30:00', '2025-11-12 22:45:00', '2025-11-13 01:00:00', NULL, 1, 1, 'Active', '2025-11-12 22:30:00', '2025-11-12 22:45:00'),
305 (3, 4, 'Daniel Martin', 'Abdominal Pain', 3, '2025-11-12 14:00:00', '2025-11-12 14:20:00', '2025-11-12 14:20:00', NULL, 1, 1, 'Active', '2025-11-12 14:00:00', '2025-11-12 14:20:00'),
306 (5, 6, 'Karen Thompson', 'Broken Leg', 2, '2025-11-11 16:30:00', '2025-11-11 16:50:00', '2025-11-11 18:30:00', NULL, 1, 1, 'Active', '2025-11-11 16:30:00', '2025-11-11 16:50:00'),
307 (1, 4, 'Paul Garcia', 'Chest Trauma', 1, '2025-11-11 08:00:00', '2025-11-11 08:15:00', '2025-11-11 10:00:00', NULL, 1, 1, 'Active', '2025-11-11 08:00:00', '2025-11-11 08:15:00'),
308 (3, 3, 'Lisa Rodriguez', 'Asthma Attack', 2, '2025-11-10 19:15:00', '2025-11-10 19:30:00', '2025-11-10 19:30:00', NULL, 1, 1, 'Active', '2025-11-10 19:15:00', '2025-11-10 19:30:00'),
309 (2, 2, 'Mark Lee', 'Drug Overdose', 1, '2025-11-10 03:00:00', '2025-11-10 03:15:00', '2025-11-10 06:00:00', NULL, 1, 1, 'Active', '2025-11-10 03:00:00', '2025-11-10 03:15:00'),
310 (5, 4, 'Betty Walker', 'Heat Stroke', 2, '2025-11-09 14:30:00', '2025-11-09 14:50:00', '2025-11-09 16:30:00', NULL, 1, 1, 'Active', '2025-11-09 14:30:00', '2025-11-09 14:50:00'),
311 (1, 6, 'Kevin Hall', 'Gunshot Wound', 1, '2025-11-09 23:45:00', '2025-11-09 23:55:00', '2025-11-10 02:30:00', NULL, 1, 1, 'Active', '2025-11-09 23:45:00', '2025-11-09 23:55:00'),
312 (3, 4, 'Donna Allen', 'Pregnancy Complications', 1, '2025-11-08 12:00:00', '2025-11-08 12:15:00', '2025-11-08 12:15:00', NULL, 1, 1, 'Active', '2025-11-08 12:00:00', '2025-11-08 12:15:00');

```

No issues found | Messages | No issues found | Query executed successfully. (local)\SQLEXPRESS (16.0 RTM) DESKTOP-C15GUE\aosur... Group32_ERRS 00:00:00 0 rows



Sample data for all dimension and transactional tables is populated in this phase. The dataset includes realistic emergency resources, hospital networks, and reservation activity, enabling meaningful testing and demonstration of system functionality.

5. Query 1 and View 1 – Available Resources by Location

Code :

```
-- =====
-- QUERIES AND VIEWS
-- =====

-- Query 1: Available Resources by Location
-- Shows available resources grouped by location to help coordinators identify nearby resources
SELECT
    l.LocationName,
    l.City,
    rt.TypeName AS ResourceType,
    r.ResourceName,
    r.Condition,
    COALESCE(h.HospitalName, o.OrganizationName) AS Owner
FROM Resources r
INNER JOIN ResourceTypes rt ON r.ResourceTypeID = rt.ResourceTypeID
INNER JOIN Locations l ON r.LocationID = l.LocationID
LEFT JOIN Hospitals h ON r.HospitalID = h.HospitalID
LEFT JOIN Organizations o ON r.OrganizationID = o.OrganizationID
WHERE r.Status = 'Available' AND r.IsActive = 1
ORDER BY l.City, rt.TypeName;
GO

-- View 1
CREATE VIEW vw_AvailableResourcesByLocation AS
SELECT
    l.LocationName, l.City, rt.TypeName AS ResourceType, r.ResourceName, r.Condition,
    COALESCE(h.HospitalName, o.OrganizationName) AS Owner, l.LocationID, r.ResourceID
```

```
FROM Resources r
INNER JOIN ResourceTypes rt ON r.ResourceTypeID = rt.ResourceTypeID
INNER JOIN Locations l ON r.LocationID = l.LocationID
LEFT JOIN Hospitals h ON r.HospitalID = h.HospitalID
LEFT JOIN Organizations o ON r.OrganizationID = o.OrganizationID
WHERE r.Status = 'Available' AND r.IsActive = 1;
```

GO

File Edit View Query Git Project Tools Extensions Window Help | Search | Solution1

Object Explorer

Project.sql ...aosuraj (53) | X

```
318 --- =====
319 --- QUERIES AND VIEWS
320 --- =====
321
322 --- Query 1: Available Resources by Location
323 --- Shows available resources grouped by location to help coordinators identify nearby resources
324
325 SELECT
326     l.LocationName,
327     l.City,
328     rt.TypeName AS ResourceType,
329     r.ResourceName,
330     r.Condition,
331     COALESCE(h.HospitalName, o.OrganizationName) AS Owner
332     FROM Resources r
333     INNER JOIN ResourceTypes rt ON r.ResourceTypeID = rt.ResourceTypeID
334     INNER JOIN Locations l ON r.LocationID = l.LocationID
335     LEFT JOIN Hospitals h ON r.HospitalID = h.HospitalID
336     LEFT JOIN Organizations o ON r.OrganizationID = o.OrganizationID
337     WHERE r.Status = 'Available' AND r.IsActive = 1
338     ORDER BY l.City, rt.TypeName;
339
340 GO
341
342 --- View 1
343
344 -- View 1
345
346 CREATE VIEW vw_AvailableResourcesByLocation AS
347
348     SELECT
349         l.LocationName, l.City, rt.TypeName AS ResourceType, r.ResourceName, r.Condition,
350         COALESCE(h.HospitalName, o.OrganizationName) AS Owner, l.LocationID, r.ResourceID
351     FROM Resources r
352     INNER JOIN ResourceTypes rt ON r.ResourceTypeID = rt.ResourceTypeID
353     INNER JOIN Locations l ON r.LocationID = l.LocationID
354     LEFT JOIN Hospitals h ON r.HospitalID = h.HospitalID
355     LEFT JOIN Organizations o ON r.OrganizationID = o.OrganizationID
356     WHERE r.Status = 'Available' AND r.IsActive = 1;
357
358 GO
```

Results | Messages

	LocationName	City	ResourceType	ResourceName	Condition	Owner
1	East Mesa	Mesa	ICU Bed	ICU-Bed-MS-101	Good	Mesa Regional Medical
2	Downtown Phoenix	Phoenix	Ambulance	Ambulance-PH-001	Good	Phoenix General Hospital

Query executed successfully. (local)\SQLEXPRESS (16.0 RTM) DESKTOP-C15GUE\aosuraj Group32_ERRS 00:00:00 21 rows

Ready

File Edit View Query Git Project Tools Extensions Window Help | Search | Solution1

Object Explorer

Project.sql ...aosuraj (53) | X

```
348 --- View 1
349
350 --- Create View vw_AvailableResourcesByLocation AS
351
352     SELECT
353         l.LocationName, l.City, rt.TypeName AS ResourceType, r.ResourceName, r.Condition,
354         COALESCE(h.HospitalName, o.OrganizationName) AS Owner, l.LocationID, r.ResourceID
355     FROM Resources r
356     INNER JOIN ResourceTypes rt ON r.ResourceTypeID = rt.ResourceTypeID
357     INNER JOIN Locations l ON r.LocationID = l.LocationID
358     LEFT JOIN Hospitals h ON r.HospitalID = h.HospitalID
359     LEFT JOIN Organizations o ON r.OrganizationID = o.OrganizationID
360     WHERE r.Status = 'Available' AND r.IsActive = 1;
361
362 GO
```

Results | Messages

	LocationName	City	ResourceType	ResourceName	Condition	Owner
1	East Mesa	Mesa	ICU Bed	ICU-Bed-MS-101	Good	Mesa Regional Medical
2	Downtown Phoenix	Phoenix	Ambulance	Ambulance-PH-001	Good	Phoenix General Hospital
3	Downtown Phoenix	Phoenix	Defibrillator	Defibrillator-PH-001	Good	Phoenix General Hospital
4	Downtown Phoenix	Phoenix	Emergency...	ER-Bed-PH-201	Good	Phoenix General Hospital
5	Downtown Phoenix	Phoenix	ICU Bed	ICU-Bed-PH-101	Good	Phoenix General Hospital
6	Downtown Phoenix	Phoenix	Oxygen Cylin...	Oxygen-PH-001	Good	Phoenix General Hospital
7	Downtown Phoenix	Phoenix	Oxygen Cylin...	Oxygen-PH-002	Good	Phoenix General Hospital
8	Downtown Phoenix	Phoenix	Stretcher	Stretcher-PH-001	Good	Phoenix General Hospital
9	Downtown Phoenix	Phoenix	Ventilator	Ventilator-PH-001	Good	Phoenix General Hospital
10	Downtown Phoenix	Phoenix	Wheelchair	Wheelchair-PH-001	Good	Phoenix General Hospital
11	Downtown Phoenix	Phoenix	Wheelchair	Wheelchair-PH-002	Fair	Phoenix General Hospital
12	North Scottsdale	Scott...	ICU Bed	ICU-Bed-SC-101	Good	Scottsdale Memorial H...
13	North Scottsdale	Scott...	Oxygen Cylin...	Oxygen-SC-001	Good	Scottsdale Memorial H...
14	North Scottsdale	Scott...	Ventilator	Ventilator-SC-001	Good	Scottsdale Memorial H...

Query executed successfully. (local)\SQLEXPRESS (16.0 RTM) DESKTOP-C15GUE\aosuraj Group32_ERRS 00:00:00 21 rows

```

349 LEFT JOIN Organizations o ON r.OrganizationID = o.OrganizationID
350 WHERE r.Status = 'Available' AND r.IsActive = 1;
351 GO
352

```

LocationName	City	ResourceType	ResourceName	Condition	Owner
East Mesa	Mesa	ICU Bed	ICU-Bed-MS-101	Good	Mesa Regional Medical
Downtown Phoenix	Phoenix	Ambulance	Ambulance-PH-001	Good	Phoenix General Hospital
Downtown Phoenix	Phoenix	Defibrillator	Defibrillator-PH-001	Good	Phoenix General Hospital
Downtown Phoenix	Phoenix	Emergency...	ER-Bed-PH-201	Good	Phoenix General Hospital
Downtown Phoenix	Phoenix	ICU Bed	ICU-Bed-PH-101	Good	Phoenix General Hospital
Downtown Phoenix	Phoenix	Oxygen Cylin...	Oxygen-PH-001	Good	Phoenix General Hospital
Downtown Phoenix	Phoenix	Oxygen Cylin...	Oxygen-PH-002	Good	Phoenix General Hospital
Downtown Phoenix	Phoenix	Stretcher	Stretcher-PH-001	Good	Phoenix General Hospital
Downtown Phoenix	Phoenix	Ventilator	Ventilator-PH-001	Good	Phoenix General Hospital
Downtown Phoenix	Phoenix	Wheelchair	Wheelchair-PH-001	Good	Phoenix General Hospital
Downtown Phoenix	Phoenix	Wheelchair	Wheelchair-PH-002	Fair	Phoenix General Hospital
North Scottsdale	Scott...	ICU Bed	ICU-Bed-SC-101	Good	Scottsdale Memorial H...
North Scottsdale	Scott...	Oxygen Cylin...	Oxygen-SC-001	Good	Scottsdale Memorial H...
North Scottsdale	Scott...	Ventilator	Ventilator-SC-001	Good	Scottsdale Memorial H...
Tempe Campus	Tempe	Ambulance	Ambulance-TM-001	Good	Tempe Medical Center
Tempe Campus	Tempe	Ambulance	Ambulance-SW-0...	Good	Southwest Ambulance ...
Tempe Campus	Tempe	Defibrillator	Defibrillator-TM-001	Good	Tempe Medical Center
Tempe Campus	Tempe	Emergency ...	ER-Bed-TM-201	Good	Tempe Medical Center
Tempe Campus ..	Tempe	ICU Bed	ICU-Bed-TM-101	Good	Tempe Medical Center
Tempe Campus ..	Tempe	Ventilator	Ventilator-TM-001	Good	Tempe Medical Center
Tempe Campus ..	Tempe	Wheelchair	Wheelchair-TM-001	Good	Tempe Medical Center

Query executed successfully.

Explanation

This view gives emergency coordinators immediate visibility into which resources are available at specific locations. During time-critical events, decision-makers must rapidly locate the closest functioning equipment or vehicles. By showing availability, condition, and ownership in one place, this view reduces communication delays and speeds up mobilization of emergency responses.

6. Query 2 and View 2 – Resource Utilization Report

Code :

```

-- Query 2: Resource Utilization Report
-- Shows usage statistics by resource type to identify which resources need more inventory
SELECT
    rt.TypeName AS ResourceType,
    rt.Category,
    COUNT(DISTINCT r.ResourceID) AS TotalResources,
    COUNT(DISTINCT CASE WHEN res.Status = 'Active' THEN res.ReservationID END) AS CurrentlyInUse,
    COUNT(DISTINCT res.ReservationID) AS TotalReservations,
    CAST(COUNT(DISTINCT res.ReservationID) AS FLOAT) / NULLIF(COUNT(DISTINCT r.ResourceID), 0) AS
AvgReservationsPerResource
FROM ResourceTypes rt
INNER JOIN Resources r ON rt.ResourceTypeID = r.ResourceTypeID
LEFT JOIN Reservations res ON r.ResourceID = res.ResourceID
WHERE r.IsActive = 1
GROUP BY rt.TypeName, rt.Category
HAVING COUNT(DISTINCT r.ResourceID) > 0
ORDER BY TotalReservations DESC;
GO

```

-- View 2

```

CREATE VIEW vw_ResourceUtilization AS
SELECT
    rt.TypeName AS ResourceType, rt.Category,
    COUNT(DISTINCT r.ResourceID) AS TotalResources,

```

```

COUNT(DISTINCT CASE WHEN res.Status = 'Active' THEN res.ReservationID END) AS CurrentlyInUse,
COUNT(DISTINCT res.ReservationID) AS TotalReservations,
CAST(COUNT(DISTINCT res.ReservationID) AS FLOAT) / NULLIF(COUNT(DISTINCT r.ResourceID), 0) AS
AvgReservationsPerResource
FROM ResourceTypes rt
INNER JOIN Resources r ON rt.ResourceTypeID = r.ResourceTypeID
LEFT JOIN Reservations res ON r.ResourceID = res.ResourceID
WHERE r.IsActive = 1
GROUP BY rt.TypeName, rt.Category
HAVING COUNT(DISTINCT r.ResourceID) > 0;

```

GO

```

-- Query 2: Resource Utilization Report
-- Shows usage statistics by resource type to identify which resources need more inventory
SELECT
    rt.TypeName AS ResourceType,
    rt.Category,
    COUNT(DISTINCT r.ResourceID) AS TotalResources,
    COUNT(DISTINCT CASE WHEN res.Status = 'Active' THEN res.ReservationID END) AS CurrentlyInUse,
    COUNT(DISTINCT res.ReservationID) AS TotalReservations,
    CAST(COUNT(DISTINCT res.ReservationID) AS FLOAT) / NULLIF(COUNT(DISTINCT r.ResourceID), 0) AS AvgReservationsPerResource
FROM ResourceTypes rt
INNER JOIN Resources r ON rt.ResourceTypeID = r.ResourceTypeID
LEFT JOIN Reservations res ON r.ResourceID = res.ResourceID
WHERE r.IsActive = 1
GROUP BY rt.TypeName, rt.Category
HAVING COUNT(DISTINCT r.ResourceID) > 0
ORDER BY TotalReservations DESC;
GO

-- View 2
CREATE VIEW vw_ResourceUtilization AS
SELECT
    rt.TypeName AS ResourceType, rt.Category,
    COUNT(DISTINCT r.ResourceID) AS TotalResources,
    COUNT(DISTINCT CASE WHEN res.Status = 'Active' THEN res.ReservationID END) AS CurrentlyInUse,
    COUNT(DISTINCT res.ReservationID) AS TotalReservations,
    CAST(COUNT(DISTINCT res.ReservationID) AS FLOAT) / NULLIF(COUNT(DISTINCT r.ResourceID), 0) AS AvgReservationsPerResource
FROM ResourceTypes rt
INNER JOIN Resources r ON rt.ResourceTypeID = r.ResourceTypeID
LEFT JOIN Reservations res ON r.ResourceID = res.ResourceID
WHERE r.IsActive = 1
GROUP BY rt.TypeName, rt.Category
HAVING COUNT(DISTINCT r.ResourceID) > 0;
GO

```

Query executed successfully.

ResourceType	Category	TotalResources	CurrentlyInUse	TotalReservations	AvgReservationsPerResource
Ambulance	Vehicle	5	1	18	3.6

```

-- View 2
CREATE VIEW vw_ResourceUtilization AS
SELECT
    rt.TypeName AS ResourceType, rt.Category,
    COUNT(DISTINCT r.ResourceID) AS TotalResources,
    COUNT(DISTINCT CASE WHEN res.Status = 'Active' THEN res.ReservationID END) AS CurrentlyInUse,
    COUNT(DISTINCT res.ReservationID) AS TotalReservations,
    CAST(COUNT(DISTINCT res.ReservationID) AS FLOAT) / NULLIF(COUNT(DISTINCT r.ResourceID), 0) AS AvgReservationsPerResource
FROM ResourceTypes rt
INNER JOIN Resources r ON rt.ResourceTypeID = r.ResourceTypeID
LEFT JOIN Reservations res ON r.ResourceID = res.ResourceID
WHERE r.IsActive = 1
GROUP BY rt.TypeName, rt.Category
HAVING COUNT(DISTINCT r.ResourceID) > 0;
GO

```

Query executed successfully.

ResourceType	Category	TotalResources	CurrentlyInUse	TotalReservations	AvgReservationsPerResource
Ambulance	Vehicle	5	1	18	3.6
ICU Bed	Bed	7	2	3	0.428571428571429
Oxygen Cylinder	Equipment	4	1	1	0.25
Stretcher	Equipment	2	0	1	0.5
Ventilator	Equipment	4	1	1	0.25
Emergency Room Bed	Bed	3	1	1	0.333333333333333
Defibrillator	Equipment	2	0	0	0
Wheelchair	Equipment	3	0	0	0

Explanation

This view summarizes how different emergency resources are being used across the entire network. It provides key metrics such as the number of available resources, how many are currently in use, total historical reservations, and the average number of reservations per resource. These insights help administrators identify high-demand resource types, plan inventory levels, and forecast needs for future emergencies.

7. Query 3 and View 3 – Emergency Response Activity

Code :

```
-- Query 3: Emergency Response Activity Report
-- Shows reservation patterns by emergency type and priority to help administrators plan better
SELECT
    res.EmergencyType, res.PriorityLevel,
    COUNT(*) AS TotalReservations,
    COUNT(CASE WHEN res.Status = 'Completed' THEN 1 END) AS CompletedReservations,
    COUNT(CASE WHEN res.Status = 'Active' THEN 1 END) AS ActiveReservations,
    rt.TypeName AS MostUsedResourceType,
    s.FirstName + ' ' + s.LastName AS Coordinator
FROM Reservations res
INNER JOIN Resources r ON res.ResourceID = r.ResourceID
INNER JOIN ResourceTypes rt ON r.ResourceTypeID = rt.ResourceTypeID
INNER JOIN Staff s ON res.RequestedBy = s.StaffID
WHERE res.ReservationDateTime >= DATEADD(MONTH, -1, GETDATE())
GROUP BY res.EmergencyType, res.PriorityLevel, rt.TypeName, s.FirstName, s.LastName
HAVING COUNT(*) > 0
ORDER BY res.PriorityLevel, TotalReservations DESC;
GO

-- View 3
CREATE VIEW vw_EmergencyResponseActivity AS
SELECT
    res.EmergencyType, res.PriorityLevel,
    COUNT(*) AS TotalReservations,
    COUNT(CASE WHEN res.Status = 'Completed' THEN 1 END) AS CompletedReservations,
    COUNT(CASE WHEN res.Status = 'Active' THEN 1 END) AS ActiveReservations,
    rt.TypeName AS ResourceType,
    s.FirstName + ' ' + s.LastName AS Coordinator, res.ReservationDateTime
FROM Reservations res
INNER JOIN Resources r ON res.ResourceID = r.ResourceID
INNER JOIN ResourceTypes rt ON r.ResourceTypeID = rt.ResourceTypeID
INNER JOIN Staff s ON res.RequestedBy = s.StaffID
WHERE res.ReservationDateTime >= DATEADD(MONTH, -1, GETDATE())
GROUP BY res.EmergencyType, res.PriorityLevel, rt.TypeName, s.FirstName, s.LastName, res.ReservationDateTime;
GO
```

File Edit View Query Git Project Tools Extensions Window Help | Search | Solution1

Object Explorer

Connect | New Query | Execute | Search | Solution1

Project.sql ...aoosuraj (53) | X

```
386  -- Query 3: Emergency Response Activity Report
387  -- Shows reservation patterns by emergency type and priority to help administrators plan better
388  SELECT
389      res.EmergencyType, res.PriorityLevel,
390      COUNT(*) AS TotalReservations,
391      COUNT(CASE WHEN res.Status = 'Completed' THEN 1 END) AS CompletedReservations,
392      COUNT(CASE WHEN res.Status = 'Active' THEN 1 END) AS ActiveReservations,
393      rt.TypeName AS MostUsedResourceType,
394      s.FirstName + ' ' + s.LastName AS Coordinator
395  FROM Reservations res
396  INNER JOIN Resources r ON res.ResourceID = r.ResourceID
397  INNER JOIN ResourceTypes rt ON r.ResourceTypeID = rt.ResourceTypeID
398  INNER JOIN Staff s ON res.RequestedBy = s.StaffID
399  WHERE res.ReservationDateTime >= DATEADD(MONTH, -1, GETDATE())
400  GROUP BY res.EmergencyType, res.PriorityLevel, rt.TypeName, s.FirstName, s.LastName
401  HAVING COUNT(*) > 0
402  ORDER BY res.PriorityLevel, TotalReservations DESC;
403
404
405  -- View 3
406  CREATE VIEW vw_EmergencyResponseActivity AS
407  SELECT
408      res.EmergencyType, res.PriorityLevel,
```

No issues found

Results Messages

EmergencyType	PriorityLevel	TotalReservations	CompletedReservations	ActiveReservations	MostUsedResourceType	Coordinator
Burns	1	1	1	0	Ambulance	Carol Martinez
Cardiac Emergency	1	1	1	0	Ambulance	Carol Martinez

Query executed successfully.

File Edit View Query Git Project Tools Extensions Window Help | Search | Solution1

Object Explorer

Connect | New Query | Execute | Search | Solution1

Project.sql ...aoosuraj (53) | X

```
406  -- View 3
407  CREATE VIEW vw_EmergencyResponseActivity AS
408  SELECT
409      res.EmergencyType, res.PriorityLevel,
410      COUNT(*) AS TotalReservations,
411      COUNT(CASE WHEN res.Status = 'Completed' THEN 1 END) AS CompletedReservations,
412      COUNT(CASE WHEN res.Status = 'Active' THEN 1 END) AS ActiveReservations,
413      rt.TypeName AS ResourceType,
414      s.FirstName + ' ' + s.LastName AS Coordinator, res.ReservationDateTime
415  FROM Reservations res
416  INNER JOIN Resources r ON res.ResourceID = r.ResourceID
417  INNER JOIN ResourceTypes rt ON r.ResourceTypeID = rt.ResourceTypeID
418  INNER JOIN Staff s ON res.RequestedBy = s.StaffID
419  WHERE res.ReservationDateTime >= DATEADD(MONTH, -1, GETDATE())
420  GROUP BY res.EmergencyType, res.PriorityLevel, rt.TypeName, s.FirstName, s.LastName, res.ReservationDate
421
422
```

No issues found

Results Messages

EmergencyType	PriorityLevel	TotalReservations	CompletedReservations	ActiveReservations	MostUsedResourceType	Coordinator
Burns	1	1	1	0	Ambulance	Carol Martinez
Cardiac Emergency	1	1	1	0	Ambulance	Carol Martinez
Chest Trauma	1	1	1	0	Ambulance	David Brown
Drug Overdose	1	1	1	0	Ambulance	Bob Williams
Gunshot Wound	1	1	1	0	Ambulance	Frank Miller
Heart Attack	1	1	0	1	ICU Bed	Carol Martinez
Pregnancy Complications	1	1	1	0	Ambulance	David Brown
Respiratory Distress	1	1	0	1	Oxygen Cylinder	Bob Williams
Seizure	1	1	1	0	Ambulance	Henry Moore

Query executed successfully.

```

406 -- View 3
407 CREATE VIEW vw_EmergencyResponseActivity AS
408 SELECT
100 % No issues found

```

	EmergencyType	PriorityLevel	TotalReservations	CompletedReservations	ActiveReservations	MostUsedResourceType	Coordinator
1	Burns	1	1	1	0	Ambulance	Carol Martinez
2	Cardiac Emergency	1	1	1	0	Ambulance	Carol Martinez
3	Chest Trauma	1	1	1	0	Ambulance	David Brown
4	Drug Overdose	1	1	1	0	Ambulance	Bob Williams
5	Gunshot Wound	1	1	1	0	Ambulance	Frank Miller
6	Heart Attack	1	1	0	1	ICU Bed	Carol Martinez
7	Pregnancy Complic...	1	1	1	0	Ambulance	David Brown
8	Respiratory Distress	1	1	0	1	Oxygen Cylinder	Bob Williams
9	Seizure	1	1	1	0	Ambulance	Henry Moore
10	Spinal Injury	1	1	1	0	Ambulance	Henry Moore
11	Stroke	1	1	1	0	ICU Bed	Bob Williams
12	Motor Vehicle Accident	1	1	1	0	Ambulance	David Brown
13	Pneumonia	2	1	0	1	Ventilator	Emma Davis
14	Trauma	2	1	0	1	Ambulance	David Brown
15	Heat Stroke	2	1	1	0	Ambulance	David Brown
16	Hypothermia	2	1	1	0	Ambulance	David Brown
17	Diabetic Emergency	2	1	1	0	Ambulance	David Brown
18	Chest Pain	2	1	0	1	Emergency Room Bed	Bob Williams
19	Allergic Reaction	2	1	1	0	Ambulance	Frank Miller
20	Asthma Attack	2	1	1	0	Ambulance	Carol Martinez
21	Broken Leg	2	1	1	0	Ambulance	Frank Miller
22	Fall Injury	3	1	1	0	Stretcher	Carol Martinez
23	Food Poisoning	3	1	1	0	Ambulance	Carol Martinez

Query executed successfully.

```

406 -- View 3
407 CREATE VIEW vw_EmergencyResponseActivity AS
408 SELECT
100 % No issues found

```

	EmergencyType	PriorityLevel	TotalReservations	CompletedReservations	ActiveReservations	MostUsedResourceType	Coordinator
3	Chest Trauma	1	1	1	0	Ambulance	David Brown
4	Drug Overdose	1	1	1	0	Ambulance	Bob Williams
5	Gunshot Wound	1	1	1	0	Ambulance	Frank Miller
6	Heart Attack	1	1	0	1	ICU Bed	Carol Martinez
7	Pregnancy Complic...	1	1	1	0	Ambulance	David Brown
8	Respiratory Distress	1	1	0	1	Oxygen Cylinder	Bob Williams
9	Seizure	1	1	1	0	Ambulance	Henry Moore
10	Spinal Injury	1	1	1	0	Ambulance	Henry Moore
11	Stroke	1	1	1	0	ICU Bed	Bob Williams
12	Motor Vehicle Accident	1	1	1	0	Ambulance	David Brown
13	Pneumonia	2	1	0	1	Ventilator	Emma Davis
14	Trauma	2	1	0	1	Ambulance	David Brown
15	Heat Stroke	2	1	1	0	Ambulance	David Brown
16	Hypothermia	2	1	1	0	Ambulance	David Brown
17	Diabetic Emergency	2	1	1	0	Ambulance	David Brown
18	Chest Pain	2	1	0	1	Emergency Room Bed	Bob Williams
19	Allergic Reaction	2	1	1	0	Ambulance	Frank Miller
20	Asthma Attack	2	1	1	0	Ambulance	Carol Martinez
21	Broken Leg	2	1	1	0	Ambulance	Frank Miller
22	Fall Injury	3	1	1	0	Stretcher	Carol Martinez
23	Food Poisoning	3	1	1	0	Ambulance	Carol Martinez
24	Post-Surgery	3	1	0	1	ICU Bed	Alice Johnson
25	Abdominal Pain	3	1	1	0	Ambulance	David Brown

Query executed successfully.

Explanation

This view analyzes recent emergency activity and reveals the frequency of emergencies by type and priority. It also shows which resources and coordinators were involved. Understanding these trends helps organizations allocate staff more effectively, plan for high-priority emergencies, and enhance readiness for recurring or seasonal patterns. The view displays priority levels alongside counts of active and completed reservations, making it easier to see which emergency types require the most urgent attention.

8. Audit Table and Triggers

Code :

```
-- =====
-- TRIGGERS FOR AUDIT TABLE
```

```
-- =====
```

```
-- Trigger 1: After INSERT on ResourceTypes
```

```
CREATE TRIGGER trg_ResourceTypes_Insert ON ResourceTypes
AFTER INSERT
AS
BEGIN
    SET NOCOUNT ON;
    INSERT INTO ResourceAudit (ResourceTypeID, TypeName, Description, Category, Operation, ModifiedBy, ModifiedDate)
    SELECT ResourceTypeID, TypeName, Description, Category, 'INSERT', SYSTEM_USER, GETDATE()
    FROM inserted;
END;
GO
```

```
-- Trigger 2: After UPDATE on ResourceTypes
```

```
CREATE TRIGGER trg_ResourceTypes_Update ON ResourceTypes
AFTER UPDATE
AS
BEGIN
    SET NOCOUNT ON;
    INSERT INTO ResourceAudit (ResourceTypeID, TypeName, Description, Category, Operation, ModifiedBy, ModifiedDate)
    SELECT ResourceTypeID, TypeName, Description, Category, 'UPDATE', SYSTEM_USER, GETDATE()
    FROM inserted;
END;
GO
```

```
-- Trigger 3: After DELETE on ResourceTypes
```

```
CREATE TRIGGER trg_ResourceTypes_Delete ON ResourceTypes
AFTER DELETE
AS
BEGIN
    SET NOCOUNT ON;
    INSERT INTO ResourceAudit (ResourceTypeID, TypeName, Description, Category, Operation, ModifiedBy, ModifiedDate)
    SELECT ResourceTypeID, TypeName, Description, Category, 'DELETE', SYSTEM_USER, GETDATE()
    FROM deleted;
END;
GO
```

```
-- Test Triggers
```

```
INSERT INTO ResourceTypes (TypeName, Description, Category, RequiresOperator, IsActive)
```

```
VALUES ('Surgical Bed', 'Post-operative recovery bed', 'Bed', 0, 1);
```

```
UPDATE ResourceTypes SET Description = 'Post-operative recovery bed with monitoring'
```

```
WHERE TypeName = 'Surgical Bed';
```

```
DELETE FROM ResourceTypes WHERE TypeName = 'Surgical Bed';
```

```
SELECT * FROM ResourceAudit ORDER BY ModifiedDate DESC;
```

```
GO
```

SQLEXPRESS (SQL Server 16.0.1160 - DESKTOP-C15GUEJ) | New Query | Execute | Solution1

Object Explorer

Databases

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- IFT53DB
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- university3

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XEvent Profiler

Project.sql ...aoosuraj (53) | X

```
423 --- =====
424 --- TRIGGERS FOR AUDIT TABLE
425 --- =====
426
427 --- Trigger 1: After INSERT on ResourceTypes
428 CREATE TRIGGER trg_ResourceTypes_Insert ON ResourceTypes
429 AFTER INSERT
430 AS
431 BEGIN
432     SET NOCOUNT ON;
433     INSERT INTO ResourceAudit (ResourceTypeID, TypeName, Description, Category, Operation, ModifiedBy, ModifiedDate)
434     SELECT ResourceTypeID, TypeName, Description, Category, 'INSERT', SYSTEM_USER, GETDATE()
435     FROM inserted;
436 END;
437 GO
438
439 --- Trigger 2: After UPDATE on ResourceTypes
440 CREATE TRIGGER trg_ResourceTypes_Update ON ResourceTypes
441 AFTER UPDATE
442 AS
443 BEGIN
444     SET NOCOUNT ON;
445     INSERT INTO ResourceAudit (ResourceTypeID, TypeName, Description, Category, Operation, ModifiedBy, ModifiedDate)
446     SELECT ResourceTypeID, TypeName, Description, Category, 'UPDATE', SYSTEM_USER, GETDATE()
447     FROM inserted;
448 END;
449 GO
450
451 --- Trigger 3: After DELETE on ResourceTypes
452 CREATE TRIGGER trg_ResourceTypes_Delete ON ResourceTypes
453 AFTER DELETE
454 AS
455 BEGIN
456     SET NOCOUNT ON;
457     INSERT INTO ResourceAudit (ResourceTypeID, TypeName, Description, Category, Operation, ModifiedBy, ModifiedDate)
458     SELECT ResourceTypeID, TypeName, Description, Category, 'DELETE', SYSTEM_USER, GETDATE()
459     FROM deleted;
460 END;
461 GO
```

No issues found

Results Messages

AuditID	ResourceTypeID	TypeName	Description	Category	Operation	ModifiedBy	ModifiedDate
1	3	11	Surgical Bed	Post-operative recovery bed with monitoring	Bed	DELETE	DESKTOP-C15GUEJ\aoosuraj 2025-12-02 10:15:41.473
2	2	11	Surgical Bed	Post-operative recovery bed with monitoring	Bed	UPDATE	DESKTOP-C15GUEJ\aoosuraj 2025-12-02 10:15:41.467

Query executed successfully.

(local)\SQLEXPRESS (16.0 RTM) | DESKTOP-C15GUEJ\aoosuraj | Group32_ERRS | 00:00:00 | 3 rows

Ready

File Edit View Query Git Project Tools Extensions Window Help | Search | Solution1

100 % No issues found Ln: 472 Ch: 56 SPC CRLF

SQLEXPRESS (SQL Server 16.0.1160 - DESKTOP-C15GUEJ) | New Query | Execute | Solution1

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- IFT53DB
- MyGuitarShop
- university3

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XEvent Profiler

Project.sql ...aoosuraj (53) | X

```
459 --- =====
460 --- Trigger 2: After UPDATE on ResourceTypes
461 CREATE TRIGGER trg_ResourceTypes_Update ON ResourceTypes
462 AFTER UPDATE
463 AS
464 BEGIN
465     SET NOCOUNT ON;
466     INSERT INTO ResourceAudit (ResourceTypeID, TypeName, Description, Category, Operation, ModifiedBy, ModifiedDate)
467     SELECT ResourceTypeID, TypeName, Description, Category, 'UPDATE', SYSTEM_USER, GETDATE()
468     FROM inserted;
469 END;
470 GO
471
472 --- Trigger 3: After DELETE on ResourceTypes
473 CREATE TRIGGER trg_ResourceTypes_Delete ON ResourceTypes
474 AFTER DELETE
475 AS
476 BEGIN
477     SET NOCOUNT ON;
478     INSERT INTO ResourceAudit (ResourceTypeID, TypeName, Description, Category, Operation, ModifiedBy, ModifiedDate)
479     SELECT ResourceTypeID, TypeName, Description, Category, 'DELETE', SYSTEM_USER, GETDATE()
480     FROM deleted;
481 END;
482 GO
```

No issues found

Results Messages

AuditID	ResourceTypeID	TypeName	Description	Category	Operation	ModifiedBy	ModifiedDate
1	3	11	Surgical Bed	Post-operative recovery bed with monitoring	Bed	DELETE	DESKTOP-C15GUEJ\aoosuraj 2025-12-02 10:15:41.473
2	2	11	Surgical Bed	Post-operative recovery bed with monitoring	Bed	UPDATE	DESKTOP-C15GUEJ\aoosuraj 2025-12-02 10:15:41.467

Query executed successfully.

(local)\SQLEXPRESS (16.0 RTM) | DESKTOP-C15GUEJ\aoosuraj | Group32_ERRS | 00:00:00 | 3 rows

Ready

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```

462
463
464
465     -- Test Triggers
466     INSERT INTO ResourceTypes (TypeName, Description, Category, RequiresOperator, IsActive)
467     VALUES ('Surgical Bed', 'Post-operative recovery bed', 'Bed', 0, 1);
468
469     UPDATE ResourceTypes SET Description = 'Post-operative recovery bed with monitoring'
470     WHERE TypeName = 'Surgical Bed';
471
472     DELETE FROM ResourceTypes WHERE TypeName = 'Surgical Bed';
473
474     SELECT * FROM ResourceAudit ORDER BY ModifiedDate DESC;
GO

```

No issues found

AuditID	ResourceTypeID	TypeName	Description	Category	Operation	ModifiedBy	ModifiedDate
1	3	11	Post-operative recovery bed with monitoring	Bed	DELETE	DESKTOP-C15GUE\raosuraj	2025-12-02 10:15:41.473
2	2	11	Surgical Bed	Bed	UPDATE	DESKTOP-C15GUE\raosuraj	2025-12-02 10:15:41.467
3	1	11	Post-operative recovery bed	Bed	INSERT	DESKTOP-C15GUE\raosuraj	2025-12-02 10:15:41.457

Query executed successfully.

The audit table and associated triggers ensure accountability by automatically logging all changes made to ResourceTypes. This feature is essential for traceability, regulatory compliance, and post-incident reviews.

9. Stored Procedure Demonstration

Code :

```

-- =====
-- STORED PROCEDURE
-- =====

-- Stored Procedure: Create Reservation with Transaction
-- Prevents double-booking by checking availability and updating resource status atomically
CREATE PROCEDURE sp_CreateReservation
    @ResourceId INT,
    @RequestedByStaffID INT,
    @PatientName VARCHAR(100) = NULL,
    @EmergencyType VARCHAR(50),
    @PriorityLevel INT,
    @StartTime DATETIME,
    @PickupLocationID INT = NULL,
    @DropoffLocationID INT = NULL,
    @Notes VARCHAR(500) = NULL
AS
BEGIN
    SET NOCOUNT ON;
    BEGIN TRANSACTION;

    BEGIN TRY
        DECLARE @CurrentStatus VARCHAR(20);
        SELECT @CurrentStatus = Status FROM Resources WHERE ResourceID = @ResourceId AND IsActive = 1;

        IF @CurrentStatus IS NULL
        BEGIN
            RAISERROR('Resource does not exist or is inactive.', 16, 1);
        END
    
```

```

ROLLBACK TRANSACTION;
RETURN;
END

IF @CurrentStatus != 'Available'
BEGIN
    RAISERROR('Resource is not available for reservation.', 16, 1);
    ROLLBACK TRANSACTION;
    RETURN;
END

INSERT INTO Reservations (ResourceID, RequestedBy, PatientName, EmergencyType, PriorityLevel,
    ReservationDateTime, StartDateTime, PickupLocationID, DropoffLocationID, Status, Notes)
VALUES (@ResourceID, @RequestedByStaffID, @PatientName, @EmergencyType, @PriorityLevel,
    GETDATE(), @StartDateTime, @PickupLocationID, @DropoffLocationID, 'Active', @Notes);

UPDATE Resources SET Status = 'In Use' WHERE ResourceID = @ResourceID;

COMMIT TRANSACTION;
SELECT SCOPE_IDENTITY() AS NewReservationID;
END TRY
BEGIN CATCH
    IF @@TRANCOUNT > 0 ROLLBACK TRANSACTION;
    DECLARE @ErrorMessage NVARCHAR(4000) = ERROR_MESSAGE();
    RAISERROR(@ErrorMessage, 16, 1);
END CATCH
END;
GO

-- Test Stored Procedure: Successful Reservation
EXEC sp_CreateReservation
@ResourceID = 13, @RequestedByStaffID = 1, @PatientName = 'Test Patient',
@EmergencyType = 'Test Emergency', @PriorityLevel = 2, @StartDateTime = '2025-11-20 10:00:00',
@PickupLocationID = 1, @DropoffLocationID = 2, @Notes = 'Test reservation';

SELECT ResourceID, ResourceName, Status FROM Resources WHERE ResourceID = 13;

-- Test Stored Procedure: Double-Booking Prevention (should fail)
EXEC sp_CreateReservation
@ResourceID = 13, @RequestedByStaffID = 2, @PatientName = 'Another Patient',
@EmergencyType = 'Another Emergency', @PriorityLevel = 1, @StartDateTime = '2025-11-20 11:00:00',
@Notes = 'This should fail';

GO

```

SQLEXPRESS (SQL Server 16.0.1160 - DESKTOP-C15GUE) | Solution1

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Project.sql ...aosuraj (60) |

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```

-- Stored Procedure: Create Reservation with Transaction
-- Prevents double-booking by checking availability and updating resource status atomically

```
CREATE PROCEDURE sp_CreateReservation
    @ResourceId INT,
    @RequestedByStaffID INT,
    @PatientName VARCHAR(100) = NULL,
    @EmergencyType VARCHAR(50),
    @PriorityLevel INT,
    @StartTime DATETIME,
    @PickupLocationID INT = NULL,
    @DropoffLocationID INT = NULL,
    @Notes VARCHAR(500) = NULL
```

AS

```
BEGIN
    SET NOCOUNT ON;
    BEGIN TRANSACTION;
```

BEGIN TRY

```
    DECLARE @CurrentStatus VARCHAR(20);
    SELECT @CurrentStatus = Status FROM Resources WHERE ResourceID = @ResourceId AND IsActive = 1;
```

No issues found

Results Messages

NewReservationID
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Query completed with errors.

(local)\SQLEXPRESS (16.0 RTM) | DESKTOP-C15GUE\aosuraj | Group32_ERRS | 00:00:00 | 2 rows

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Ready

File Edit View Query Git Project Tools Extensions Window Help | Search | Solution1

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Project.sql ...aosuraj (60) |

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```

BEGIN

```
    SET NOCOUNT ON;
    BEGIN TRANSACTION;
```

BEGIN TRY

```
    DECLARE @CurrentStatus VARCHAR(20);
    SELECT @CurrentStatus = Status FROM Resources WHERE ResourceID = @ResourceId AND IsActive = 1;
```

IF @CurrentStatus IS NULL

```
    BEGIN
        RAISERROR('Resource does not exist or is inactive.', 16, 1);
        ROLLBACK TRANSACTION;
        RETURN;
    END
```

IF @CurrentStatus != 'Available'

```
    BEGIN
        RAISERROR('Resource is not available for reservation.', 16, 1);
        ROLLBACK TRANSACTION;
        RETURN;
    END
```

INSERT INTO Reservations (ResourceId, RequestedBy, PatientName, EmergencyType, PriorityLevel, ReservationDateTime, StartDateTime, PickupLocationID, DropoffLocationID, Status, Notes)

```
VALUES (@ResourceId, @RequestedByStaffID, @PatientName, @EmergencyType, @PriorityLevel,
```

No issues found

Results Messages

NewReservationID
1 26

Query completed with errors.

(local)\SQLEXPRESS (16.0 RTM) | DESKTOP-C15GUE\aosuraj | Group32_ERRS | 00:00:00 | 2 rows

Ln: 545 Ch: 3 SPC CRLF

Ready

File Edit View Query Git Project Tools Extensions Window Help | Search | Solution1

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Project.sql ...aosuraj (60) |

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```

BEGIN

```
    SET NOCOUNT ON;
    BEGIN TRANSACTION;
```

BEGIN TRY

```
    DECLARE @CurrentStatus VARCHAR(20);
    SELECT @CurrentStatus = Status FROM Resources WHERE ResourceID = @ResourceId AND IsActive = 1;
```

IF @CurrentStatus IS NULL

```
    BEGIN
        RAISERROR('Resource does not exist or is inactive.', 16, 1);
        ROLLBACK TRANSACTION;
        RETURN;
    END
```

IF @CurrentStatus != 'Available'

```
    BEGIN
        RAISERROR('Resource is not available for reservation.', 16, 1);
        ROLLBACK TRANSACTION;
        RETURN;
    END
```

INSERT INTO Reservations (ResourceId, RequestedBy, PatientName, EmergencyType, PriorityLevel, ReservationDateTime, StartDateTime, PickupLocationID, DropoffLocationID, Status, Notes)

```
VALUES (@ResourceId, @RequestedByStaffID, @PatientName, @EmergencyType, @PriorityLevel,
```

No issues found

Results Messages

NewReservationID
1 26

Query completed with errors.

(local)\SQLEXPRESS (16.0 RTM) | DESKTOP-C15GUE\aosuraj | Group32_ERRS | 00:00:00 | 2 rows

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SQLEXPRESS (SQL Server 16.0.1160 - DESKTOP-C15GUE) | Group32_ERRS | Execute | Solution1

Object Explorer

Project.sql ...aoosuraj (60) ▾

```
507 IF @CurrentStatus != 'Available'
508 BEGIN
509     RAISERROR('Resource is not available for reservation.', 16, 1);
510     ROLLBACK TRANSACTION;
511     RETURN;
512 END
513
514 INSERT INTO Reservations (ResourceId, RequestedBy, PatientName, EmergencyType, PriorityLevel,
515                             ReservationDateTime, StartDateTime, PickupLocationID, DropoffLocationID, Status, Notes)
516 VALUES (@ResourceId, @RequestedByStaffID, @PatientName, @EmergencyType, @PriorityLevel,
517          GETDATE(), @StartDateTime, @PickupLocationID, @DropoffLocationID, 'Active', @Notes);
518
519 UPDATE Resources SET Status = 'In Use' WHERE ResourceID = @ResourceId;
520
521 COMMIT TRANSACTION;
522 SELECT SCOPE_IDENTITY() AS NewReservationID;
523 END TRY
524 BEGIN CATCH
525     IF @@TRANCOUNT > 0 ROLLBACK TRANSACTION;
526     DECLARE @ErrorMessage NVARCHAR(4000) = ERROR_MESSAGE();
527     RAISERROR(@ErrorMessage, 16, 1);
528 END CATCH
529
530 GO
531
```

No issues found

Results Messages

NewReservationID
1 26

Query completed with errors.

(local)\SQLEXPRESS (16.0 RTM) | DESKTOP-C15GUE\aoosuraj | Group32_ERRS | 00:00:00 | 2 rows

Ready

SQLEXPRESS (SQL Server 16.0.1160 - DESKTOP-C15GUE) | Group32_ERRS | Execute | Solution1

Object Explorer

Project.sql ...aoosuraj (60) ▾

```
531 -- Test Stored Procedure: Successful Reservation
532 EXEC sp_CreateReservation
533     @ResourceId = 13, @RequestedByStaffID = 1, @PatientName = 'Test Patient',
534     @EmergencyType = 'Test Emergency', @PriorityLevel = 2, @StartTime = '2025-11-20 10:00:00',
535     @PickupLocationID = 1, @DropoffLocationID = 2, @Notes = 'Test reservation';
536
537 SELECT ResourceID, ResourceName, Status FROM Resources WHERE ResourceID = 13;
538
539 -- Test Stored Procedure: Double-Booking Prevention (should fail)
540 EXEC sp_CreateReservation
541     @ResourceId = 13, @RequestedByStaffID = 2, @PatientName = 'Another Patient',
542     @EmergencyType = 'Another Emergency', @PriorityLevel = 1, @StartTime = '2025-11-20 11:00:00',
543     @Notes = 'This should fail';
544
545 GO
```

No issues found

Results Messages

NewReservationID
1 26

Query completed with errors.

(local)\SQLEXPRESS (16.0 RTM) | DESKTOP-C15GUE\aoosuraj | Group32_ERRS | 00:00:00 | 2 rows

Ready

```

531 -- Test Stored Procedure: Successful Reservation
532 EXEC sp_CreateReservation
533     @ResourceID = 13, @RequestedByStaffID = 1, @PatientName = 'Test Patient',
534     @EmergencyType = 'Test Emergency', @PriorityLevel = 2, @StartDateTime = '2025-11-20 10:00:00',
535     @PickupLocationID = 1, @DropoffLocationID = 2, @Notes = 'Test reservation';
536
537     SELECT ResourceID, ResourceName, Status FROM Resources WHERE ResourceID = 13;
538
539 -- Test Stored Procedure: Double-Booking Prevention (should fail)
540 EXEC sp_CreateReservation
541     @ResourceID = 13, @RequestedByStaffID = 2, @PatientName = 'Another Patient',
542     @EmergencyType = 'Another Emergency', @PriorityLevel = 1, @StartDateTime = '2025-11-20 11:00:00',
543     @Notes = 'This should fail';
544
545 GO

```

(1 row affected)
Msg 50000, Level 16, State 1, Procedure sp_CreateReservation, Line 53 [Batch Start Line 530]
Resource is not available for reservation.

Completion time: 2025-12-02T10:20:06.9774522-07:00

This stored procedure encapsulates the reservation process, enforcing availability checks and preventing double-booking. It updates both reservation and resource status in a single transaction, ensuring data integrity throughout the system.

10. User-Defined Function (UDF)

Code :

```
-- =====
-- USER-DEFINED FUNCTION
-- =====

-- Function: Calculate Distance using Haversine Formula
-- Returns distance in miles between two lat/long coordinates
CREATE FUNCTION fn_CalculateDistance
(
    @Lat1 DECIMAL(9,6), @Lon1 DECIMAL(9,6),
    @Lat2 DECIMAL(9,6), @Lon2 DECIMAL(9,6)
)
RETURNS DECIMAL(10,2)
AS
BEGIN
    DECLARE @Distance DECIMAL(10,2);
    DECLARE @EarthRadius DECIMAL(10,2) = 3959;

    IF @Lat1 IS NULL OR @Lon1 IS NULL OR @Lat2 IS NULL OR @Lon2 IS NULL
        RETURN NULL;

    DECLARE @dLat DECIMAL(18,10) = RADIANS(@Lat2 - @Lat1);
    DECLARE @dLon DECIMAL(18,10) = RADIANS(@Lon2 - @Lon1);
    DECLARE @a DECIMAL(18,10) = SIN(@dLat / 2) * SIN(@dLat / 2) +
        COS(RADIANS(@Lat1)) * COS(RADIANS(@Lat2)) * SIN(@dLon / 2) * SIN(@dLon / 2);
    DECLARE @c DECIMAL(18,10) = 2 * ATN2(SQRT(@a), SQRT(1 - @a));

    SET @Distance = @EarthRadius * @c;
    RETURN @Distance;

```

```
END;  
GO
```

```
-- Test Function: Calculate distances between locations
```

```
SELECT  
    l1.LocationName AS FromLocation, l2.LocationName AS ToLocation,  
    l1.City AS FromCity, l2.City AS ToCity,  
    dbo.fn_CalculateDistance(l1.Latitude, l1.Longitude, l2.Latitude, l2.Longitude) AS DistanceMiles  
FROM Locations l1  
CROSS JOIN Locations l2  
WHERE l1.LocationID < l2.LocationID AND l1.Latitude IS NOT NULL AND l2.Latitude IS NOT NULL  
ORDER BY DistanceMiles;
```

```
-- Test Function: Find nearest ambulances to Downtown Phoenix
```

```
DECLARE @EmergencyLat DECIMAL(9,6) = 33.448376;  
DECLARE @EmergencyLon DECIMAL(9,6) = -112.074036;
```

```
SELECT TOP 5  
    r.ResourceName, l.LocationName, l.City,  
    dbo.fn_CalculateDistance(@EmergencyLat, @EmergencyLon, l.Latitude, l.Longitude) AS DistanceMiles,  
    r.Condition, COALESCE(h.HospitalName, o.OrganizationName) AS Owner  
FROM Resources r  
INNER JOIN ResourceTypes rt ON r.ResourceTypeID = rt.ResourceTypeID  
INNER JOIN Locations l ON r.LocationID = l.LocationID  
LEFT JOIN Hospitals h ON r.HospitalID = h.HospitalID  
LEFT JOIN Organizations o ON r.OrganizationID = o.OrganizationID  
WHERE rt.TypeName = 'Ambulance' AND r.Status = 'Available' AND l.Latitude IS NOT NULL  
ORDER BY DistanceMiles;
```

```
GO
```

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Object Explorer

Project.sql ...aosuraj (60) ▾

```

547  ====
548  -- USER-DEFINED FUNCTION
549  ====
550
551  -- Function: Calculate Distance using Haversine Formula
552  -- Returns distance in miles between two lat/long coordinates
553  CREATE FUNCTION fn_CalculateDistance
554  (
555      @Lat1 DECIMAL(9,6), @Lon1 DECIMAL(9,6),
556      @Lat2 DECIMAL(9,6), @Lon2 DECIMAL(9,6)
557  )
558  RETURNS DECIMAL(10,2)
559  AS
560  BEGIN
561      DECLARE @Distance DECIMAL(10,2);
562      DECLARE @EarthRadius DECIMAL(10,2) = 3959;
563
564      IF @Lat1 IS NULL OR @Lon1 IS NULL OR @Lat2 IS NULL OR @Lon2 IS NULL
565          RETURN NULL;
566
567      DECLARE @dLat DECIMAL(18,10) = RADIANS(@Lat2 - @Lat1);
568      DECLARE @dLon DECIMAL(18,10) = RADIANS(@Lon2 - @Lon1);
569      DECLARE @a DECIMAL(18,10) = SIN(@dLat / 2) * SIN(@dLat / 2) +
570          COS(RADIANS(@Lat1)) * COS(RADIANS(@Lat2)) * SIN(@dLon / 2) * SIN(@dLon / 2);
571      DECLARE @c DECIMAL(18,10) = 2 * ATN2(SQRT(@a), SQRT(1 - @a));
572
573      SET @Distance = @EarthRadius * @c;
574
575  END;
576  GO
577
578  -- Test Function: Calculate distances between locations
579  SELECT
580      l1.LocationName AS FromLocation, l2.LocationName AS ToLocation,
581      l1.City AS FromCity, l2.City AS ToCity,
582      dbo.fn_CalculateDistance(l1.Latitude, l1.Longitude, l2.Latitude, l2.Longitude) AS DistanceMiles
583  FROM Locations l1
584  CROSS JOIN Locations l2
585  WHERE l1.LocationID < l2.LocationID AND l1.Latitude IS NOT NULL AND l2.Latitude IS NOT NULL
586  ORDER BY DistanceMiles;
587
588  -- Test Function: Find nearest ambulances to Downtown Phoenix
589  DECLARE @EmergencyLat DECIMAL(9,6) = 33.448376;

```

No issues found

Results Messages

FromLocation	ToLocation	FromCity	ToCity	DistanceMiles
Peoria Sports Complex	Surprise Stadium Area	Peoria	Surprise	7.09
West Glendale	Peoria Sports Complex	Glendale	Peoria	7.15

Query executed successfully.

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Object Explorer

Project.sql ...aosuraj (60) ▾

```

567  DECLARE @dLat DECIMAL(18,10) = RADIANS(@Lat2 - @Lat1);
568  DECLARE @dLon DECIMAL(18,10) = RADIANS(@Lon2 - @Lon1);
569  DECLARE @a DECIMAL(18,10) = SIN(@dLat / 2) * SIN(@dLat / 2) +
570      COS(RADIANS(@Lat1)) * COS(RADIANS(@Lat2)) * SIN(@dLon / 2) * SIN(@dLon / 2);
571  DECLARE @c DECIMAL(18,10) = 2 * ATN2(SQRT(@a), SQRT(1 - @a));
572
573  SET @Distance = @EarthRadius * @c;
574
575  END;
576  GO
577
578  -- Test Function: Calculate distances between locations
579  SELECT
580      l1.LocationName AS FromLocation, l2.LocationName AS ToLocation,
581      l1.City AS FromCity, l2.City AS ToCity,
582      dbo.fn_CalculateDistance(l1.Latitude, l1.Longitude, l2.Latitude, l2.Longitude) AS DistanceMiles
583  FROM Locations l1
584  CROSS JOIN Locations l2
585  WHERE l1.LocationID < l2.LocationID AND l1.Latitude IS NOT NULL AND l2.Latitude IS NOT NULL
586  ORDER BY DistanceMiles;
587
588  -- Test Function: Find nearest ambulances to Downtown Phoenix
589  DECLARE @EmergencyLat DECIMAL(9,6) = 33.448376;

```

No issues found

Results Messages

FromLocation	ToLocation	FromCity	ToCity	DistanceMiles
Peoria Sports Complex	Surprise Stadium Area	Peoria	Surprise	7.09
West Glendale	Peoria Sports Complex	Glendale	Peoria	7.15

Query executed successfully.

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Object Explorer

Project.sql ...aoosuraj (60) ▾

```
581     l1.City AS FromCity, l2.City AS ToCity,
582     dbo.fn_CalculateDistance(l1.Latitude, l1.Longitude, l2.Latitude, l2.Longitude) AS DistanceMiles
583   FROM Locations l1
584   CROSS JOIN Locations l2
585   WHERE l1.LocationID < l2.LocationID AND l1.Latitude IS NOT NULL AND l2.Latitude IS NOT NULL
586   ORDER BY DistanceMiles;
587
588 -- Test Function: Find nearest ambulances to Downtown Phoenix
589 DECLARE @EmergencyLat DECIMAL(9,6) = 33.448376;
590 DECLARE @EmergencyLon DECIMAL(9,6) = -112.074036;
591
592 SELECT TOP 5
593     r.ResourceName, l.LocationName, l.City,
594     dbo.fn_CalculateDistance(@EmergencyLat, @EmergencyLon, l.Latitude, l.Longitude) AS DistanceMiles,
595     r.Condition, COALESCE(h.HospitalName, o.OrganizationName) AS Owner
596   FROM Resources r
597   INNER JOIN ResourceTypes rt ON r.ResourceTypeID = rt.ResourceTypeID
598   INNER JOIN Locations l ON r.LocationID = l.LocationID
599   LEFT JOIN Hospitals h ON r.HospitalID = h.HospitalID
600   LEFT JOIN Organizations o ON r.OrganizationID = o.OrganizationID
601   WHERE rt.TypeName = 'Ambulance' AND r.Status = 'Available' AND l.Latitude IS NOT NULL
602   ORDER BY DistanceMiles;
603 GO
```

100 % No issues found

Results Messages

	FromLocation	ToLocation	FromCity	ToCity	DistanceMiles
1	Peoria Sports Complex	Surprise Stadium Area	Peoria	Surprise	7.09
2	West Glendale	Peoria Sports Complex	Glendale	Peoria	7.15

Query executed successfully.

File Edit View Query Git Project Tools Extensions Window Help Search Solution1

Object Explorer

Project.sql ...aoosuraj (60) ▾

```
598     INNER JOIN Locations l ON r.LocationID = l.LocationID
599     LEFT JOIN Hospitals h ON r.HospitalID = h.HospitalID
600     LEFT JOIN Organizations o ON r.OrganizationID = o.OrganizationID
601   WHERE rt.TypeName = 'Ambulance' AND r.Status = 'Available' AND l.Latitude IS NOT NULL
602   ORDER BY DistanceMiles;
603 GO
```

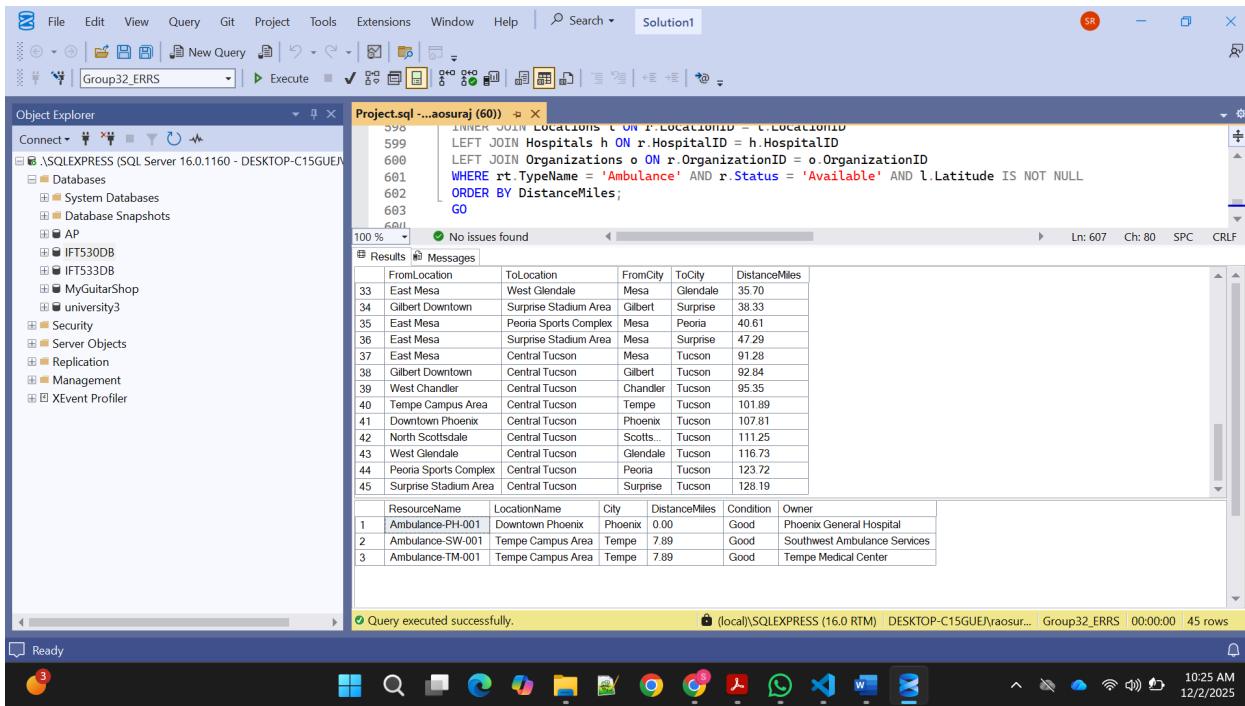
100 % No issues found

Results Messages

	FromLocation	ToLocation	FromCity	ToCity	DistanceMiles
1	Peoria Sports Complex	Surprise Stadium Area	Peoria	Surprise	7.09
2	West Glendale	Peoria Sports Complex	Glendale	Peoria	7.15
3	Downtown Phoenix	Tempe Campus Area	Phoenix	Tempe	7.89
4	Tempe Campus Area	West Chandler	Tempe	Chandler	8.25
5	Downtown Phoenix	West Glendale	Phoenix	Glendale	8.99
6	West Chandler	Gilbert Downtown	Chandler	Gilbert	9.37
7	Tempe Campus Area	Gilbert Downtown	Tempe	Gilbert	10.05
8	West Glendale	Surprise Stadium Area	Glendale	Surprise	12.08
9	Downtown Phoenix	West Chandler	Phoenix	Chandler	12.46
10	East Mesa	Gilbert Downtown	Mesa	Gilbert	12.81
11	Tempe Campus Area	North Scottsdale	Tempe	Scottsdale	13.95
12	Downtown Phoenix	Peoria Sports Complex	Phoenix	Peoria	15.91
13	Tempe Campus Area	West Glendale	Tempe	Glendale	16.21

ResourceName	LocationName	City	DistanceMiles	Condition	Owner	
1	Ambulance-PH-001	Downtown Phoenix	Phoenix	0.00	Good	Phoenix General Hospital
2	Ambulance-SW-001	Tempe Campus Area	Tempe	7.89	Good	Southwest Ambulance Services
3	Ambulance-TM-001	Tempe Campus Area	Tempe	7.89	Good	Tempe Medical Center

Query executed successfully.



The distance-calculation function implements the Haversine formula to measure geospatial distance between two locations. This enables the system to identify the closest emergency resource to any incident location—an essential capability in time-sensitive scenarios.

11. Cursor Demonstration

Code :

```
-- =====
-- CURSOR
-- =====

-- Cursor: Auto-complete reservations active for more than 24 hours
-- Prevents resources from being stuck in 'In Use' status

SELECT ReservationID, ResourceID, PatientName, StartDateTime,
       DATEDIFF(HOUR, StartDateTime, GETDATE()) AS HoursActive, Status
FROM Reservations
WHERE Status = 'Active' AND EndDateTime IS NULL
      AND DATEDIFF(HOUR, StartDateTime, GETDATE()) > 24
ORDER BY StartDateTime;
GO

DECLARE @ReservationID INT, @ResourceID INT, @PatientName VARCHAR(100);
DECLARE @StartTime DATETIME, @CompletedCount INT = 0;

DECLARE reservation_cursor CURSOR FOR
SELECT ReservationID, ResourceID, PatientName, StartDateTime
FROM Reservations
WHERE Status = 'Active' AND EndDateTime IS NULL
      AND DATEDIFF(HOUR, StartDateTime, GETDATE()) > 24;

OPEN reservation_cursor;
FETCH NEXT FROM reservation_cursor INTO @ReservationID, @ResourceID, @PatientName, @StartTime;
```

```
WHILE @@FETCH_STATUS = 0
BEGIN
    UPDATE Reservations
    SET Status = 'Completed',
        EndDateTime = DATEADD(HOUR, 24, StartDateTime),
        Notes = ISNULL(Notes + ' | ', '') + 'Auto-completed by system after 24 hours'
    WHERE ReservationID = @ReservationID;

    UPDATE Resources SET Status = 'Available' WHERE ResourceID = @ResourceID;

    SET @CompletedCount = @CompletedCount + 1;
    FETCH NEXT FROM reservation_cursor INTO @ReservationID, @ResourceID, @PatientName, @StartDateTime;
END;

CLOSE reservation_cursor;
DEALLOCATE reservation_cursor;

PRINT 'Total reservations auto-completed: ' + CAST(@CompletedCount AS VARCHAR);

SELECT ReservationID, ResourceID, PatientName, StartDateTime, EndDateTime, Status, Notes
FROM Reservations
WHERE Notes LIKE '%Auto-completed by system%'
ORDER BY StartDateTime;
```

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Object Explorer

Connect ▾ New Query Execute

Project.sql -...aosuraj (60) ▾

```
605  =====
606  -- Cursor: Auto-complete reservations active for more than 24 hours
607  -- Prevents resources from being stuck in 'In Use' status
608
609
610
611
612  SELECT ReservationID, ResourceID, PatientName, StartDateTime,
613      DATEDIFF(HOUR, StartDateTime, GETDATE()) AS HoursActive, Status
614  FROM Reservations
615  WHERE Status = 'Active' AND EndDateTime IS NULL
616      AND DATEDIFF(HOUR, StartDateTime, GETDATE()) > 24
617  ORDER BY StartDateTime;
618  GO
619
620  DECLARE @ReservationID INT, @ResourceID INT, @PatientName VARCHAR(100);
621  DECLARE @StartTime DATETIME, @CompletedCount INT = 0;
622
623  DECLARE reservation_cursor CURSOR FOR
624  SELECT ReservationID, ResourceID, PatientName, StartDateTime
625  FROM Reservations
626  WHERE Status = 'Active' AND EndDateTime IS NULL
627
628
629
630
631
632
633
634
635
```

Results Messages

ReservationID	ResourceID	PatientName	StartDateTime	HoursActive	Status
1	9	David Anderson	2025-11-15 14:00:00.000	404	Active
2	7	Michael Wilson	2025-11-16 11:30:00.000	383	Active
3	4	Mary Williams	2025-11-17 14:30:00.000	356	Active
4	5	James Brown	2025-11-17 17:00:00.000	353	Active

Query executed successfully. (local)\SQLEXPRESS (16.0 RTM) DESKTOP-C15GUE\aosuraj Group32_ERRS 00:00:00 14 rows

Ln: 603 Ch: 3 SPC CRLF

File Edit View Query Git Project Tools Extensions Window Help | Search | Solution1

Object Explorer

Connect ▾ New Query Execute

Project.sql -...aosuraj (60) ▾

```
614  FROM Reservations
615  WHERE Status = 'Active' AND EndDateTime IS NULL
616      AND DATEDIFF(HOUR, StartDateTime, GETDATE()) > 24
617  ORDER BY StartDateTime;
618
619
620  DECLARE @ReservationID INT, @ResourceID INT, @PatientName VARCHAR(100);
621  DECLARE @StartTime DATETIME, @CompletedCount INT = 0;
622
623  DECLARE reservation_cursor CURSOR FOR
624  SELECT ReservationID, ResourceID, PatientName, StartDateTime
625  FROM Reservations
626  WHERE Status = 'Active' AND EndDateTime IS NULL
627      AND DATEDIFF(HOUR, StartDateTime, GETDATE()) > 24;
628
629  OPEN reservation_cursor;
630  FETCH NEXT FROM reservation_cursor INTO @ReservationID, @ResourceID, @PatientName, @StartTime;
631
632  WHILE @@FETCH_STATUS = 0
633  BEGIN
634      UPDATE Reservations
635      SET Status = 'Completed',
```

Results Messages

ReservationID	ResourceID	PatientName	StartDateTime	HoursActive	Status
1	9	David Anderson	2025-11-15 14:00:00.000	404	Active
2	7	Michael Wilson	2025-11-16 11:30:00.000	383	Active
3	4	Mary Williams	2025-11-17 14:30:00.000	356	Active
4	5	James Brown	2025-11-17 17:00:00.000	353	Active

Query executed successfully. (local)\SQLEXPRESS (16.0 RTM) DESKTOP-C15GUE\aosuraj Group32_ERRS 00:00:00 14 rows

Ln: 603 Ch: 3 SPC CRLF

File Edit View Query Git Project Tools Extensions Window Help | Search | Solution1

Object Explorer

Project.sql ...aoosuraj (60) ▾

```

627     AND DATEDIFF(HOUR, StartDateTime, GETDATE()) > 24;
628
629     OPEN reservation_cursor;
630     FETCH NEXT FROM reservation_cursor INTO @ReservationID, @ResourceID, @PatientName, @StartDateTime;
631
632     WHILE @@FETCH_STATUS = 0
633     BEGIN
634         UPDATE Reservations
635             SET Status = 'Completed',
636                 EndDateTime = DATEADD(HOUR, 24, StartDateTime),
637                 Notes = ISNULL(Notes + ' | ', '') + 'Auto-completed by system after 24 hours'
638             WHERE ReservationID = @ReservationID;
639
640         UPDATE Resources SET Status = 'Available' WHERE ResourceID = @ResourceID;
641
642         SET @CompletedCount = @CompletedCount + 1;
643         FETCH NEXT FROM reservation_cursor INTO @ReservationID, @ResourceID, @PatientName, @StartDateTime;
644     END;
645
646     CLOSE reservation_cursor;
647     DEALLOCATE reservation_cursor;
648

```

No issues found

Results Messages

ReservationID	ResourceID	PatientName	StartDateTime	HoursActive	Status
1	9	David Anderson	2025-11-15 14:00:00.000	404	Active
2	7	Michael Wilson	2025-11-16 11:30:00.000	383	Active
3	4	Mary Williams	2025-11-17 14:30:00.000	356	Active
4	5	James Brown	2025-11-17 14:30:00.000	353	Active

Query executed successfully.

File Edit View Query Git Project Tools Extensions Window Help | Search | Solution1

Object Explorer

Project.sql ...aoosuraj (60) ▾

```

648     PRINT 'Total reservations auto-completed: ' + CAST(@CompletedCount AS VARCHAR);
649
650
651     SELECT ReservationID, ResourceID, PatientName, StartDateTime, EndDateTime, Status, Notes
652     FROM Reservations
653     WHERE Notes LIKE '%Auto-completed by system%'
654     ORDER BY StartDateTime;
655     GO
656

```

No issues found

Results Messages

ReservationID	ResourceID	PatientName	StartDateTime	HoursActive	Status
1	9	David Anderson	2025-11-15 14:00:00.000	404	Active
2	7	Michael Wilson	2025-11-16 11:30:00.000	383	Active
3	4	Mary Williams	2025-11-17 14:30:00.000	356	Active
4	5	James Brown	2025-11-17 17:00:00.000	353	Active
5	2	Jane Smith	2025-11-18 09:30:00.000	337	Active
6	3	Robert Johnson	2025-11-18 10:15:00.000	336	Active
7	26	Test Patient	2025-11-20 10:00:00.000	288	Active

ReservationID	ResourceID	PatientName	StartDateTime	EndDateTime	Status	Notes
1	9	David Anderson	2025-11-15 14:00:00.000	2025-11-16 14:00:00.000	Completed	Under observation Auto-completed by system aft...
2	7	Michael Wilson	2025-11-16 11:30:00.000	2025-11-17 11:30:00.000	Completed	Requires ventilator support Auto-completed by sy...
3	4	Mary Williams	2025-11-17 14:30:00.000	2025-11-18 14:30:00.000	Completed	Extended ICU stay required Auto-completed by s...
4	5	James Brown	2025-11-17 17:00:00.000	2025-11-18 17:00:00.000	Completed	Critical condition Auto-completed by system after ...
5	2	Jane Smith	2025-11-18 09:30:00.000	2025-11-19 09:30:00.000	Completed	Vehicle under maintenance, reassigned Auto-co...
6	3	Robert Johnson	2025-11-18 10:15:00.000	2025-11-19 10:15:00.000	Completed	Patient on oxygen support Auto-completed by sy...
7	26	Test Patient	2025-11-20 10:00:00.000	2025-11-21 10:00:00.000	Completed	Test reservation Auto-completed by system after ...

Query executed successfully.

```

648 PRINT 'Total reservations auto-completed: ' + CAST(@CompletedCount AS VARCHAR);
649
650
651 SELECT ReservationID, ResourceID, PatientName, StartDateTime, EndDateTime, Status, Notes
652 FROM Reservations
653 WHERE Notes LIKE '%Auto-completed by system%'
654 ORDER BY StartDateTime;
655 GO
656

```

No issues found

Results Messages

(1 row affected)

Total reservations auto-completed: 7

(7 rows affected)

Completion time: 2025-12-02T10:26:22.3292318-07:00

Query executed successfully.

The cursor automatically completes long-running active reservations that exceed 24 hours. By updating both the reservation and associated resource, the system ensures resources do not remain locked due to stale or forgotten entries.

12. Verification

Code :

```
-- =====
-- VERIFICATION
-- =====
```

```

SELECT 'Hospitals' AS TableName, COUNT(*) AS RecordCount FROM Hospitals
UNION ALL SELECT 'Organizations' AS TableName, COUNT(*) FROM Organizations
UNION ALL SELECT 'ResourceTypes' AS TableName, COUNT(*) FROM ResourceTypes
UNION ALL SELECT 'Locations' AS TableName, COUNT(*) FROM Locations
UNION ALL SELECT 'Staff' AS TableName, COUNT(*) FROM Staff
UNION ALL SELECT 'Resources' AS TableName, COUNT(*) FROM Resources
UNION ALL SELECT 'Reservations' AS TableName, COUNT(*) FROM Reservations
UNION ALL SELECT 'ResourceAudit' AS TableName, COUNT(*) FROM ResourceAudit;
GO

```

```

656 =====
657   --- VERIFICATION
658   ---
659
660
661   SELECT 'Hospitals' AS TableName, COUNT(*) AS RecordCount FROM Hospitals
662   UNION ALL SELECT 'Organizations' AS TableName, COUNT(*) AS RecordCount FROM Organizations
663   UNION ALL SELECT 'ResourceTypes' AS TableName, COUNT(*) AS RecordCount FROM ResourceTypes
664   UNION ALL SELECT 'Locations' AS TableName, COUNT(*) AS RecordCount FROM Locations
665   UNION ALL SELECT 'Staff' AS TableName, COUNT(*) AS RecordCount FROM Staff
666   UNION ALL SELECT 'Resources' AS TableName, COUNT(*) AS RecordCount FROM Resources
667   UNION ALL SELECT 'Reservations' AS TableName, COUNT(*) AS RecordCount FROM Reservations
668   UNION ALL SELECT 'ResourceAudit' AS TableName, COUNT(*) AS RecordCount FROM ResourceAudit;
669   GO
670

```

Results

TableName	RecordCount
1 Hospitals	10
2 Organizations	10
3 ResourceTypes	10
4 Locations	10
5 Staff	10
6 Resources	30
7 Reservations	26
8 ResourceAudit	3

Query executed successfully.

The verification step confirms that all tables contain the expected number of rows, ensuring the system is fully populated and functioning correctly before final delivery.

13. Conclusion

The Emergency Resource Reservation and Coordination System (ERRS) successfully integrates all required components of a complex emergency-response database. Through structured tables, constraints, audit mechanisms, analytical views, stored procedures, and automated cursor logic, the system demonstrates how data can be leveraged to improve response times, manage critical resources, and support life-saving decisions. This project highlights the importance of relational database design in real-world emergency management environments and showcases a complete, functional implementation aligned with professional standards.