School Management Database

Create a School Database Description:

Using SQL Server MMC, create tables and indexes for storing students, subjects and classes data.

Background of the problem statement:

Rainbow School is creating software for school management. The first stage is to design a database in SQL Server which will manage all the data. This database will then be used in the web-based application for school management.

You must use the following:

SQL Server 17 Express Edition

Tables:

The following master tables will be created:

- ✓ Student – store all student data across multiple classes
- ✓ Subjects – master list of subjects taught in all classes
- ✓ Classes – list of classes in the school

SQL STATEMENTS:

```
create database School_Management
go
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--Rainbow School is creating software for school management. The first stage is to design a
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--SQL Server 17 Express Edition

--Tables:
--The following master tables will be created:

--Student – store all student data across multiple classes
--Subjects – master list of subjects taught in all classes
--Classes – list of classes in the school
-----------------------------------------------------------------------
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-- Create the Subjects table
CREATE TABLE Subjects (
    SubjectID INT PRIMARY KEY,
    SubjectName NVARCHAR(50) NOT NULL
);

-- Create the Classes table
CREATE TABLE Classes (
    ClassID INT PRIMARY KEY,
    ClassName NVARCHAR(50) NOT NULL
);

-- Create the Students table
CREATE TABLE Students (
    StudentID INT PRIMARY KEY,
```
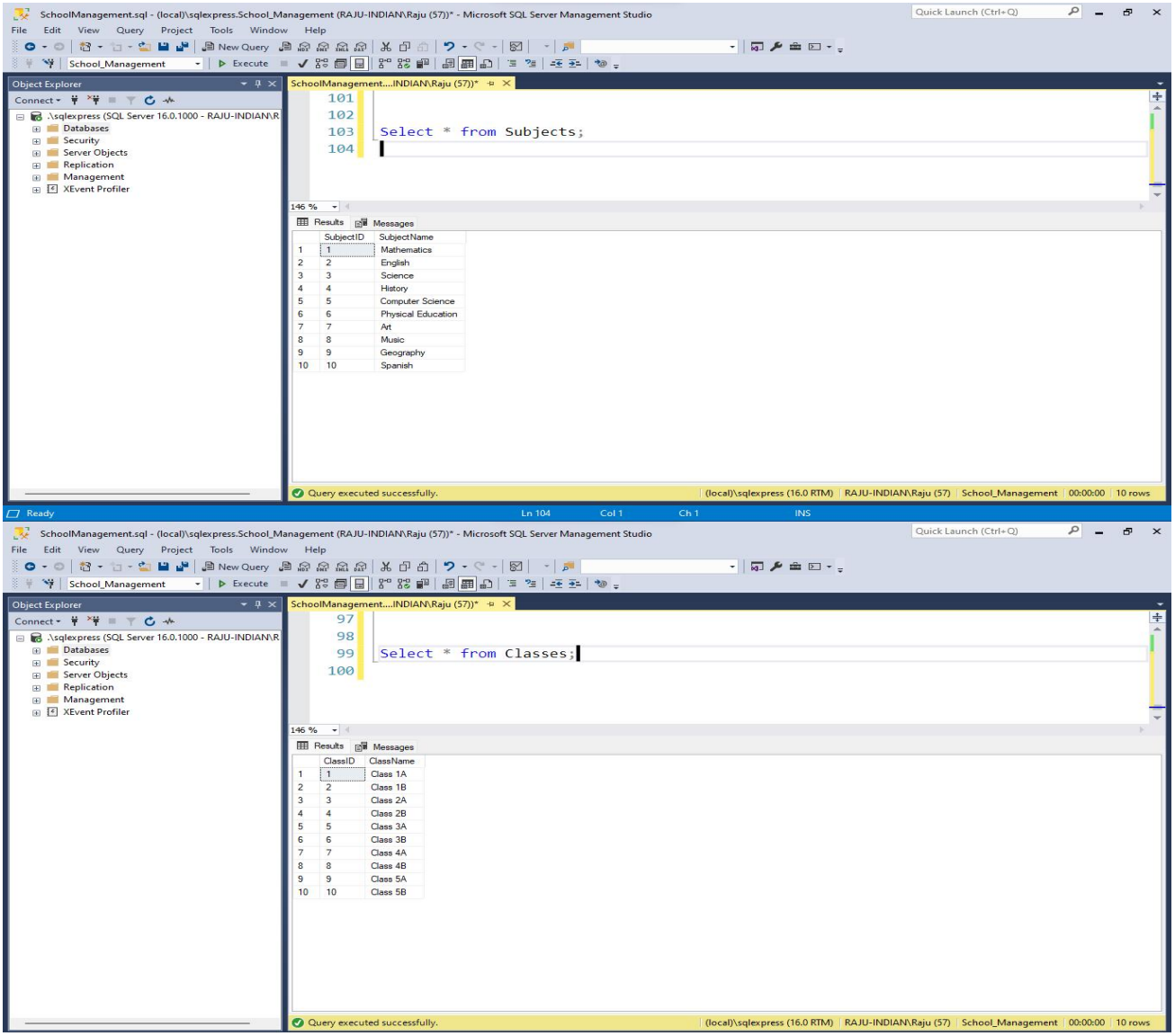
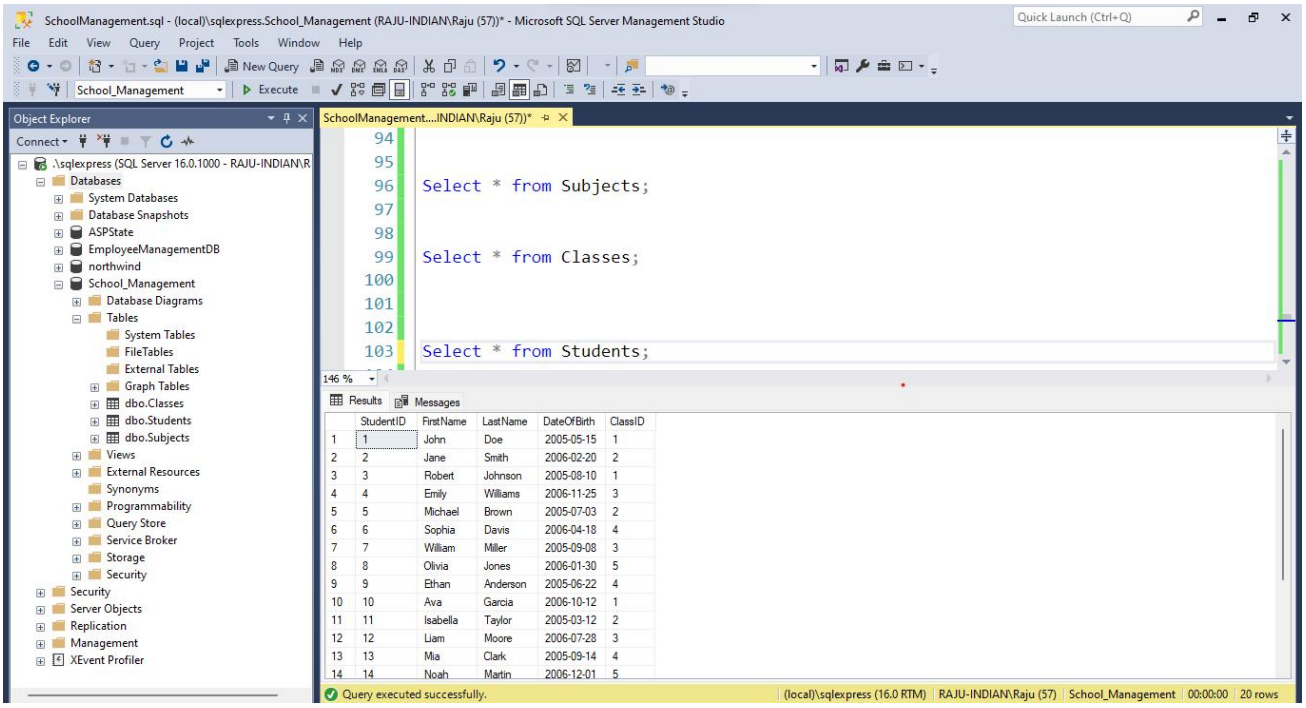
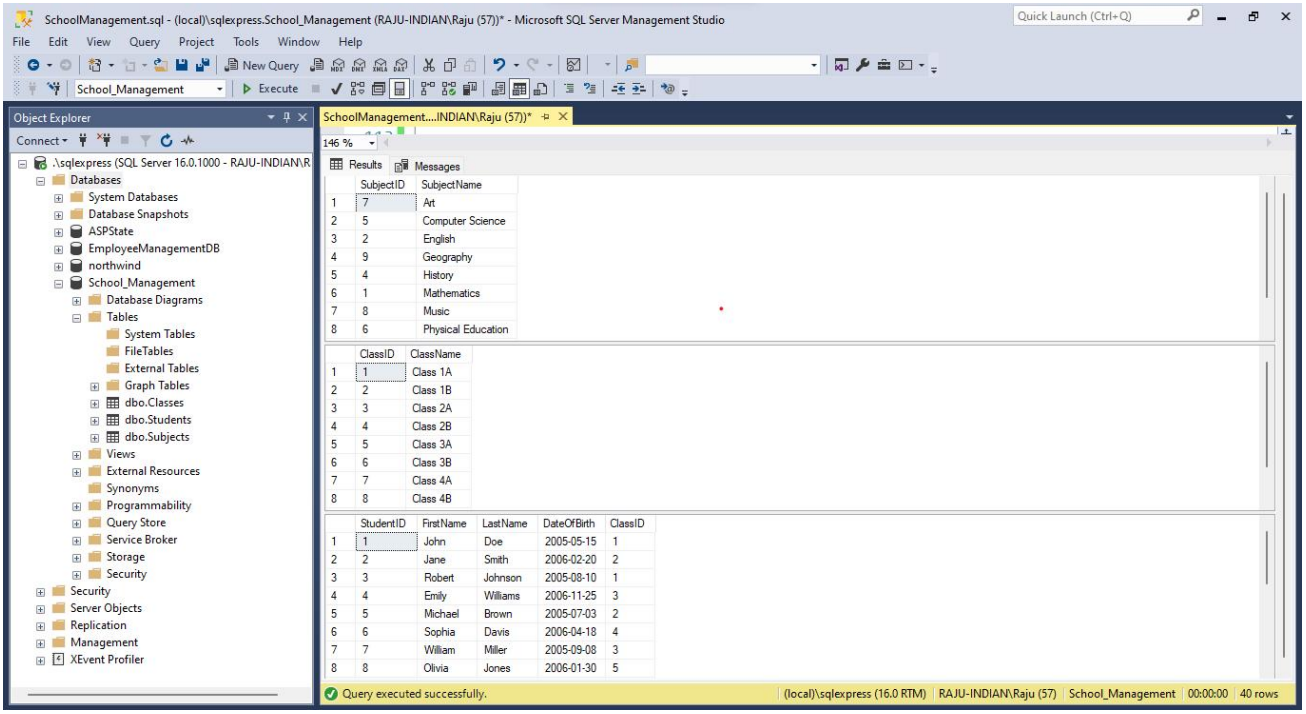

```
    FirstName NVARCHAR(50) NOT NULL,
    LastName NVARCHAR(50) NOT NULL,
    DateOfBirth DATE,
    ClassID INT REFERENCES Classes(ClassID),
    CONSTRAINT FK_Student_Class FOREIGN KEY (ClassID) REFERENCES Classes(ClassID)
);

INSERT INTO Subjects (SubjectID, SubjectName)
VALUES
    (1, 'Mathematics'),
    (2, 'English'),
    (3, 'Science'),
    (4, 'History'),
    (5, 'Computer Science'),
       (6, 'Physical Education'),
    (7, 'Art'),
    (8, 'Music'),
    (9, 'Geography'),
    (10, 'Spanish');


INSERT INTO Classes (ClassID, ClassName)
VALUES
    (1, 'Class 1A'),
    (2, 'Class 1B'),
    (3, 'Class 2A'),
    (4, 'Class 2B'),
    (5, 'Class 3A'),
       (6, 'Class 3B'),
    (7, 'Class 4A'),
    (8, 'Class 4B'),
    (9, 'Class 5A'),
    (10, 'Class 5B');


INSERT INTO Students (StudentID, FirstName, LastName, DateOfBirth, ClassID)
VALUES
    (1, 'John', 'Doe', '2005-05-15', 1),
    (2, 'Jane', 'Smith', '2006-02-20', 2),
    (3, 'Robert', 'Johnson', '2005-08-10', 1),
    (4, 'Emily', 'Williams', '2006-11-25', 3),
    (5, 'Michael', 'Brown', '2005-07-03', 2),
    (6, 'Sophia', 'Davis', '2006-04-18', 4),
    (7, 'William', 'Miller', '2005-09-08', 3),
    (8, 'Olivia', 'Jones', '2006-01-30', 5),
    (9, 'Ethan', 'Anderson', '2005-06-22', 4),
    (10, 'Ava', 'Garcia', '2006-10-12', 1),
       (11, 'Isabella', 'Taylor', '2005-03-12', 2),
    (12, 'Liam', 'Moore', '2006-07-28', 3),
    (13, 'Mia', 'Clark', '2005-09-14', 4),
    (14, 'Noah', 'Martin', '2006-12-01', 5),
    (15, 'Emma', 'White', '2005-04-25', 1),
    (16, 'Jackson', 'Lee', '2006-08-19', 2),
    (17, 'Sophie', 'Allen', '2005-10-02', 3),
    (18, 'Lucas', 'Hall', '2006-02-15', 4),
    (19, 'Aria', 'Young', '2005-07-17', 5),
    (20, 'Caleb', 'Scott', '2006-11-08', 1);


Select * from Subjects;
```

```sql
Select * from Classes;


Select * from Subjects;


-- Create indexes for efficient querying(performance tuning)
CREATE INDEX IX_SubjectName ON Subjects(SubjectName);
CREATE INDEX IX_ClassName ON Classes(ClassName);
CREATE INDEX IX_StudentLastName ON Students(LastName);


--Displaying tables after indexing:

Select * from Subjects;
Select * from Classes;
Select * from Subjects;
```

Screen shorts:




SchoolManagement.sql - (local)\sqlexpress.School_Management (RAJU-INDIAN\Raju (57))* - Microsoft SQL Server Management Studio
Quick Launch (Ctrl+Q)
File Edit View Query Project Tools Window Help
New Query
School_Management
Execute
Object Explorer
Connect
.\sqlexpress (SQL Server 16.0.1000 - RAJU-INDIAN\R
Databases
System Databases
Database Snapshots
ASPState
EmployeeManagementDB
northwind
School_Management
Database Diagrams
Tables
System Tables
FileTables
External Tables
Graph Tables
dbo.Classes
dbo.Students
dbo.Subjects
Views
External Resources
Synonyms
Programmability
Query Store
Service Broker
Storage
Security
Security
Server Objects
Replication
Management
XEvent Profiler
SchoolManagement....INDIAN\Raju (57))*
94
95
96 Select * from Subjects;
97
98
99 Select * from Classes;
100
101
102
103 Select * from Students;
146 %
Results
Messages
StudentID FirstName LastName DateOfBirth ClassID
1 1 John Doe 2005-05-15 1
2 2 Jane Smith 2006-02-20 2
3 3 Robert Johnson 2005-08-10 1
4 4 Emily Williams 2006-11-25 3
5 5 Michael Brown 2005-07-03 2
6 6 Sophia Davis 2006-04-18 4
7 7 William Miller 2005-09-08 3
8 8 Olivia Jones 2006-01-30 5
9 9 Ethan Anderson 2005-06-22 4
10 10 Ava Garcia 2006-10-12 1
11 11 Isabella Taylor 2005-03-12 2
12 12 Liam Moore 2006-07-28 3
13 13 Mia Clark 2005-09-14 4
14 14 Noah Martin 2006-12-01 5
Query executed successfully.
(local)\sqlexpress (16.0 RTM) RAJU-INDIAN\Raju (57) School_Management 00:00:00 20 rows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XEvent Profiler
SchoolManagement....INDIAN\Raju (57))*
146 %
Results
Messages
SubjectID SubjectName
1 7 Art
2 5 Computer Science
3 2 English
4 9 Geography
5 4 History
6 1 Mathematics
7 8 Music
8 6 Physical Education
ClassID ClassName
1 1 Class 1A
2 2 Class 1B
3 3 Class 2A
4 4 Class 2B
5 5 Class 3A
6 6 Class 3B
7 7 Class 4A
8 8 Class 4B
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7 7 William Miller 2005-09-08 3
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(local)\sqlexpress (16.0 RTM) RAJU-INDIAN\Raju (57) School_Management 00:00:00 40 rows