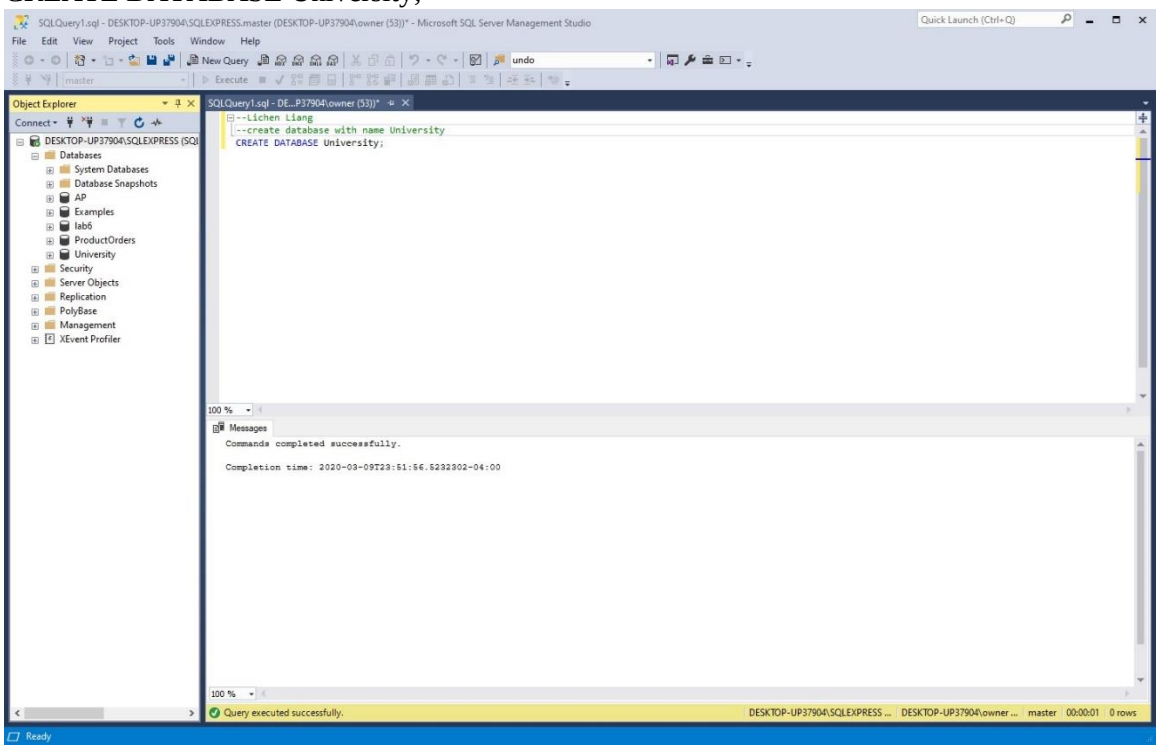
1. CREATE DATABASE University;

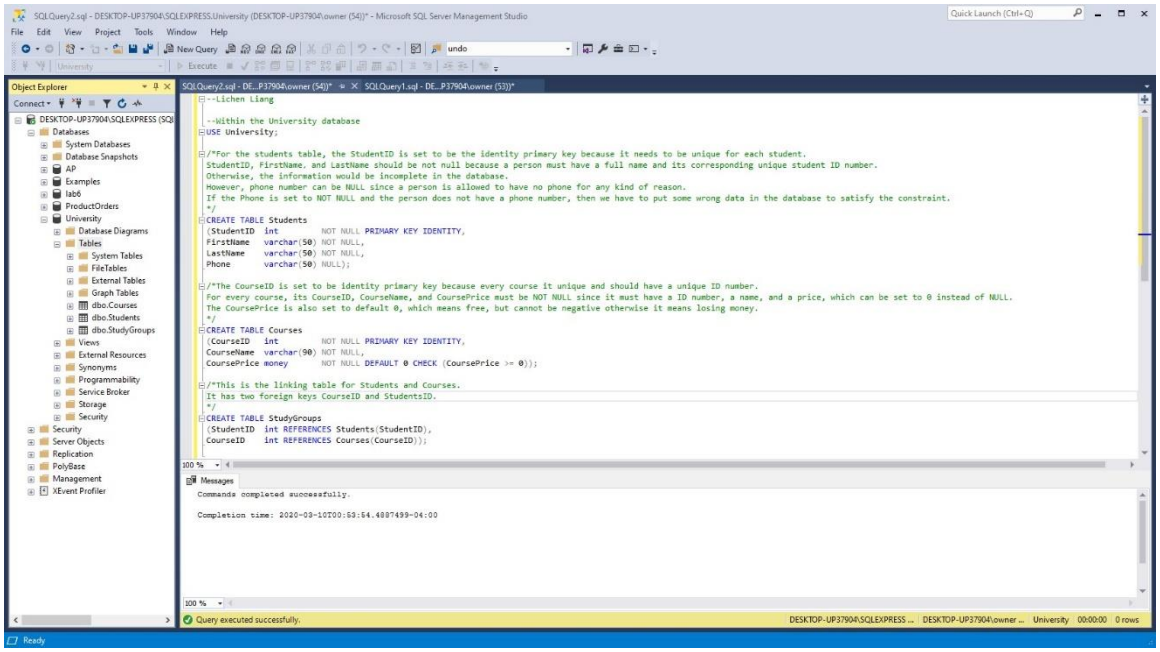


2. USE University;

```
CREATE TABLE Students
(StudentID      int             NOT NULL PRIMARY KEY IDENTITY,
FirstName       varchar(50)     NOT NULL,
LastName        varchar(50)     NOT NULL,
Phone           varchar(50)     NULL);

CREATE TABLE Courses
(CourseID       int             NOT NULL PRIMARY KEY IDENTITY,
CourseName      varchar(90)     NOT NULL,
CoursePrice money               NOT NULL DEFAULT 0 CHECK (CoursePrice >= 0));

CREATE TABLE StudyGroups
(StudentID      int     REFERENCES Students(StudentID),
CourseID        int     REFERENCES Courses(CourseID));
```

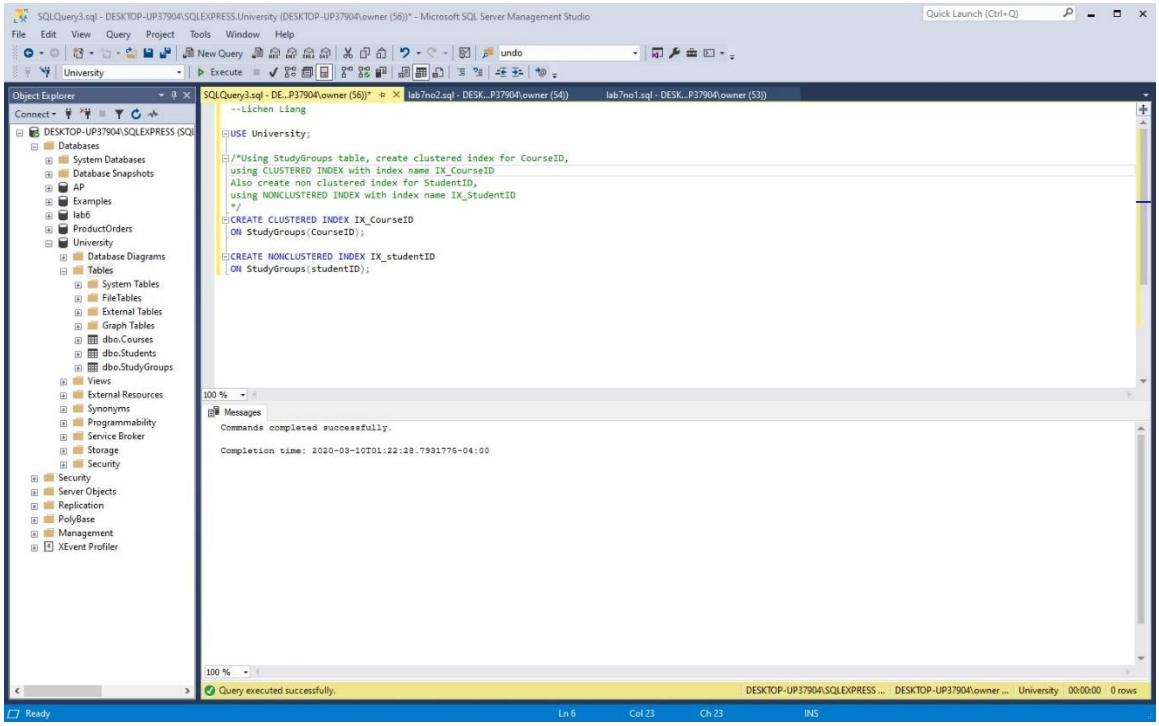


Students table and Courses table have a many-to-many relationship. StudyGroups is their linking table. So both Students and Courses are a one-to-many relationship with the linking table.

3. USE University;

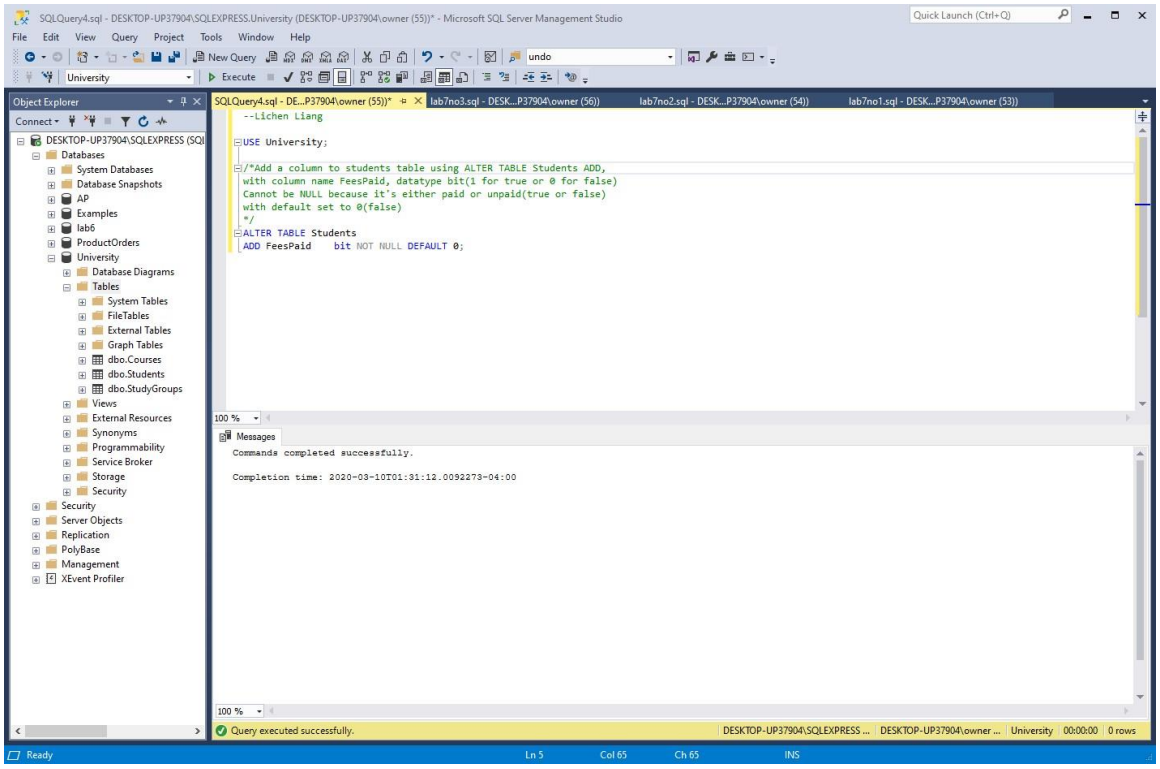
   CREATE CLUSTERED INDEX IX_CourseID
   ON StudyGroups(CourseID);

   CREATE NONCLUSTERED INDEX IX_studentID
   ON StudyGroups(studentID);



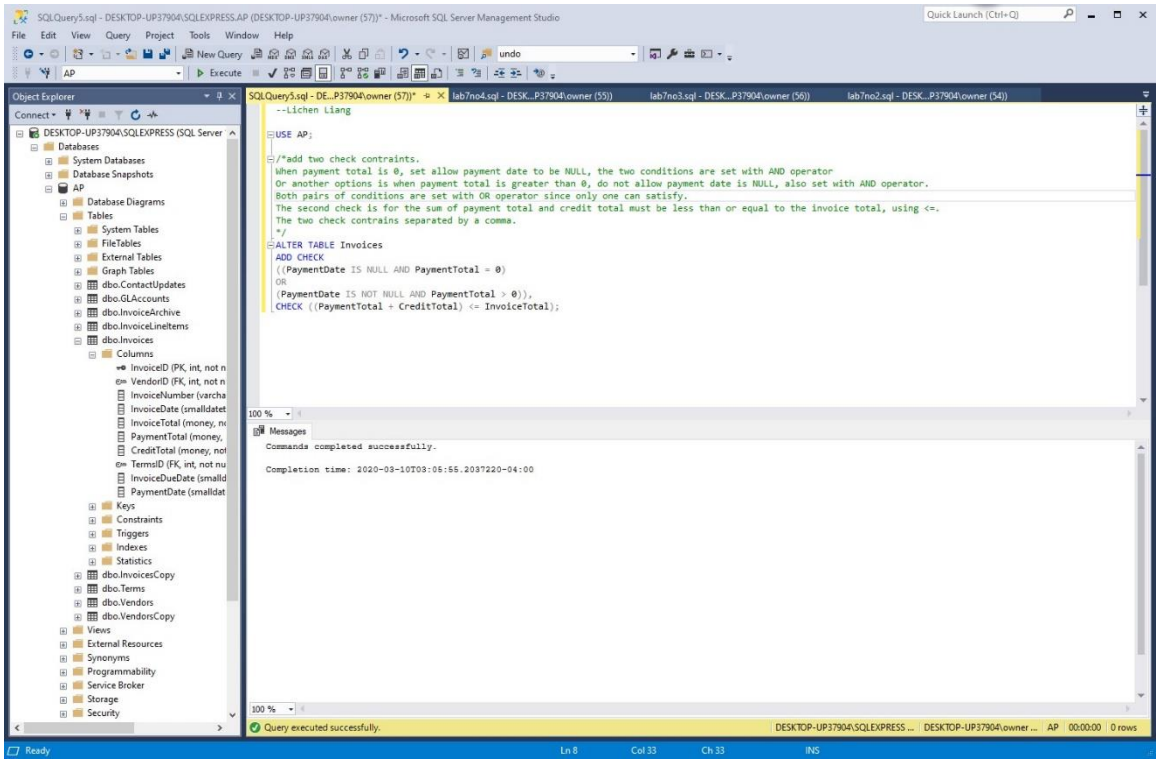
4. USE University;

ALTER TABLE Students
ADD FeesPaid bit NOT NULL DEFAULT 0;



5. USE AP;

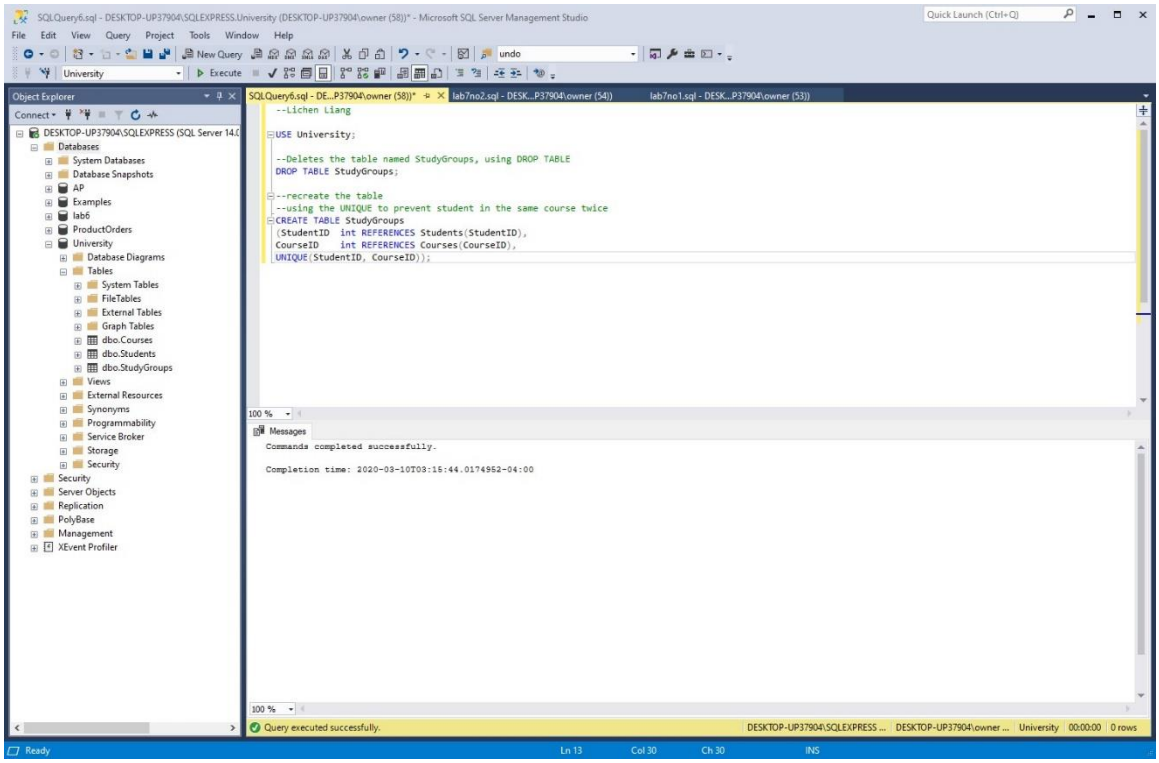
   ALTER TABLE Invoices
   ADD CHECK
   ((PaymentDate IS NULL AND PaymentTotal = 0)
   OR
   (PaymentDate IS NOT NULL AND PaymentTotal > 0)),
   CHECK ((PaymentTotal + CreditTotal) <= InvoiceTotal);



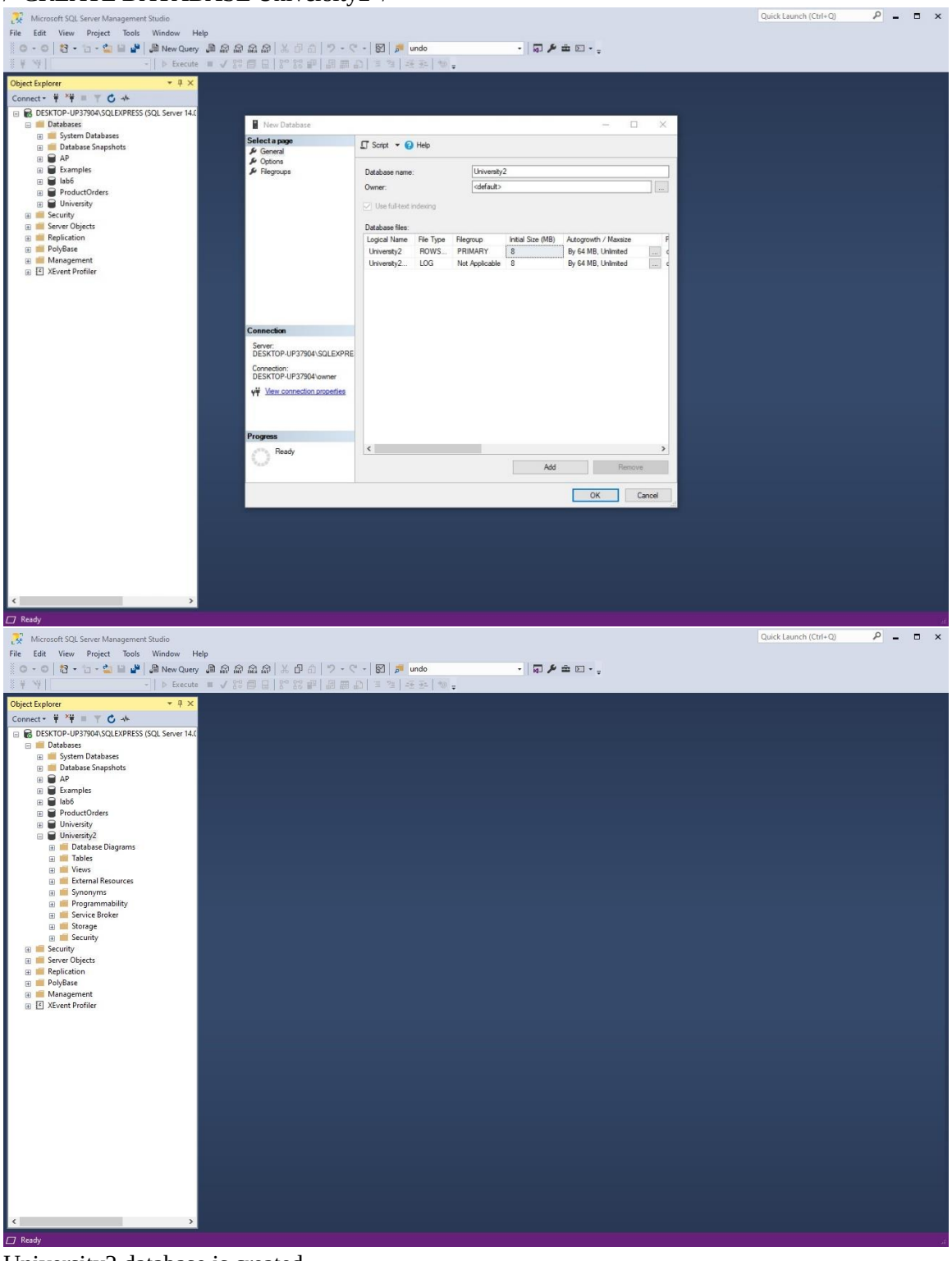
6. USE University;

   DROP TABLE StudyGroups;

   CREATE TABLE StudyGroups
   (StudentID int REFERENCES Students(StudentID),
   CourseID int REFERENCES Courses(CourseID),
   UNIQUE(StudentID, CourseID));



7. /*CREATE DATABASE University2*/



University2 database is created.

Remarks

This lab we practiced how to use DDL to manipulate the database, such as CREATE, DROP, ALTER. We also practiced using constrains and understand why are they important for different kind of columns. I think this a very good practice for the lecture as well as the project coming up. A more complicated challenge would be creating a database with more tables, columns, constrains, etc.