Project 3: ERD with schedules

Group 4(1045 section)

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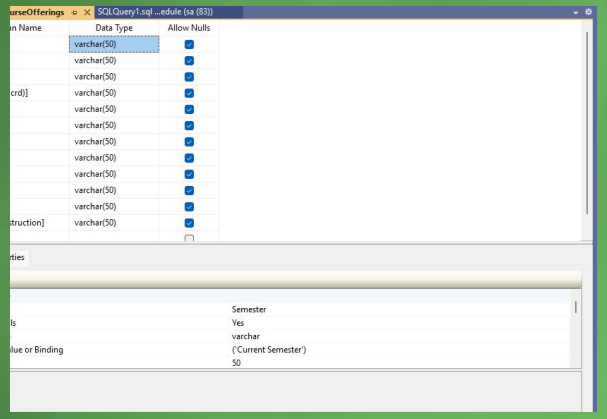
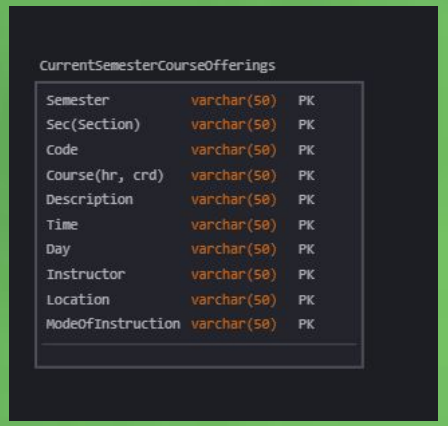
Introduction and Deliverables:





As seen in the images, we wanted to start scratch with our class schedule database to remove any anomalies and make it well organized and well maintain, adhering to data governance and based on a logical hierarchy as how a lot of these attributes and attributes can work in a school sense.

Introduction and Deliverables:

1. All tables and columns should be defined using PascalCase which is a subset of camelCase where the first letter is capitalized. No underscores.
2. Create schema names that segregate the tables into sub-systems of your design.
3. There are various examples of data anomalies that needed be handled with constraints.
4. At a minimum 7 tables, the design should include the following tables
    a. Department
    b. Instructor who can work in one or more Departments
    c. Course should be a parent to the class table.
    d. Class
    e. Building Location
    f. Room Location within the Building Location
    g. Mode of Instruction
5. Create column names that are atomic. An example using the instructor column can be parsed into LastName, FirstName and a computed (derived) column of the instructor's FullName (concat (LastName,', ', FirstName) which must be persisted.
6. Create self-documenting User defined Datatype names for all of the columns in your database. Include in the PowerPoint as a section dedicated to explaining your hierarchy and reuse.
7. Build in constraints with self-documenting names that enhance the data quality in your design such as (Max enrollment, Credits, etc.). The more the better to enhance the quality of your database.
8. Create Primary Keys and alternate indexes with an explanation of why you choose those alternate indexes for your application.

To sum up what we are showcasing, we made our tables for the DB, formatted professionally with Pascals case and 3nf.

Everything was made with a purpose and function.

Introduction and Deliverables:

We adhered to :

Security & Auditing

Security Table: Implemented a table just for that.

System Columns: All production tables require UserAuthorizationKey, DateAdded, and DateOfLastUpdate.

Constraints & UDTs

UDTs: Create User Defined Datatypes for application columns.

Validation: Build detailed constraints (Defaults, Uniques) for data entry.

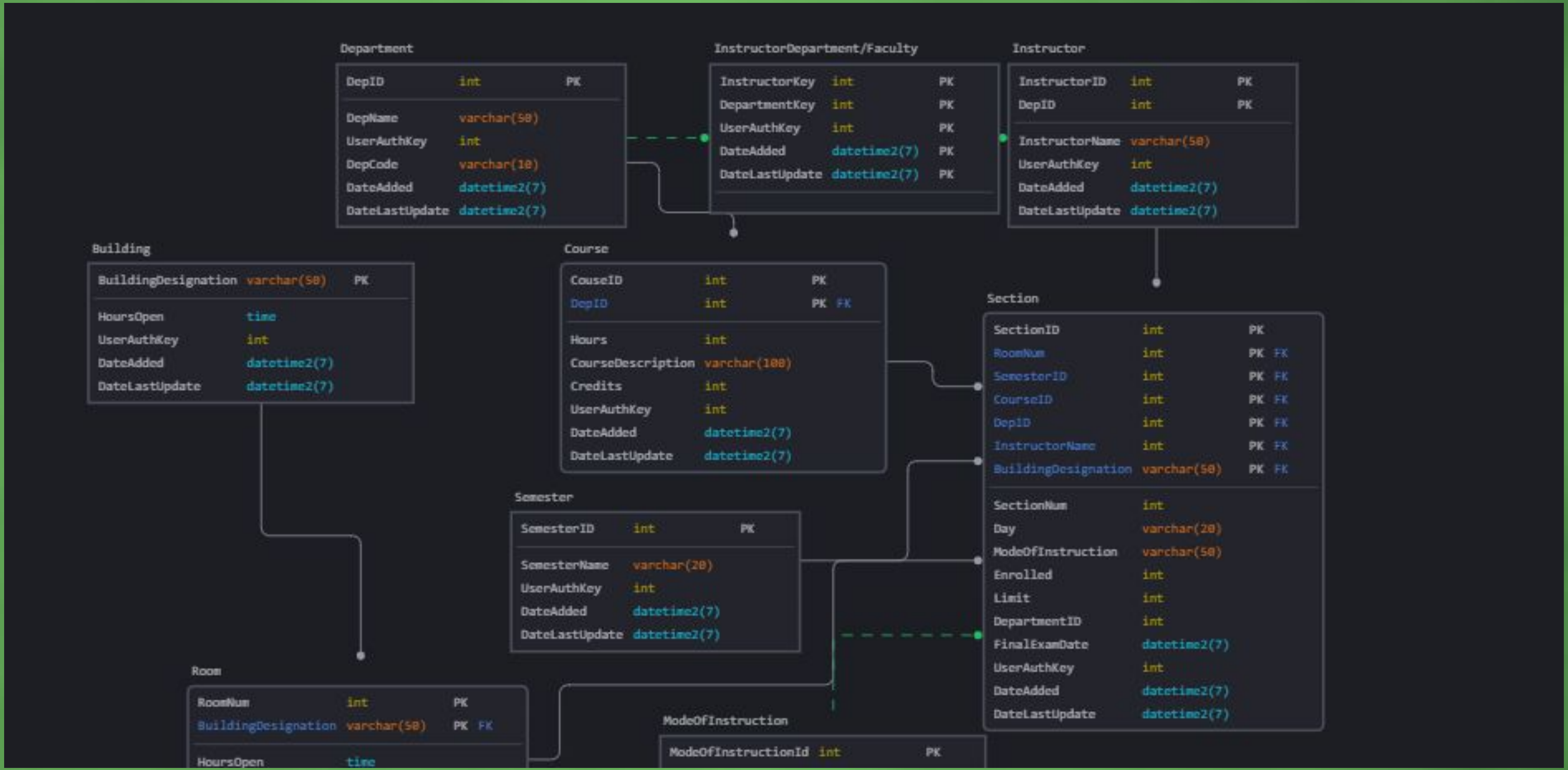
Naming

Naming: PascalCase for all objects. No underscores. Must be self-documenting.

Schemas: Segregate tables into sub-systems (e.g., Class, Location, Metadata).

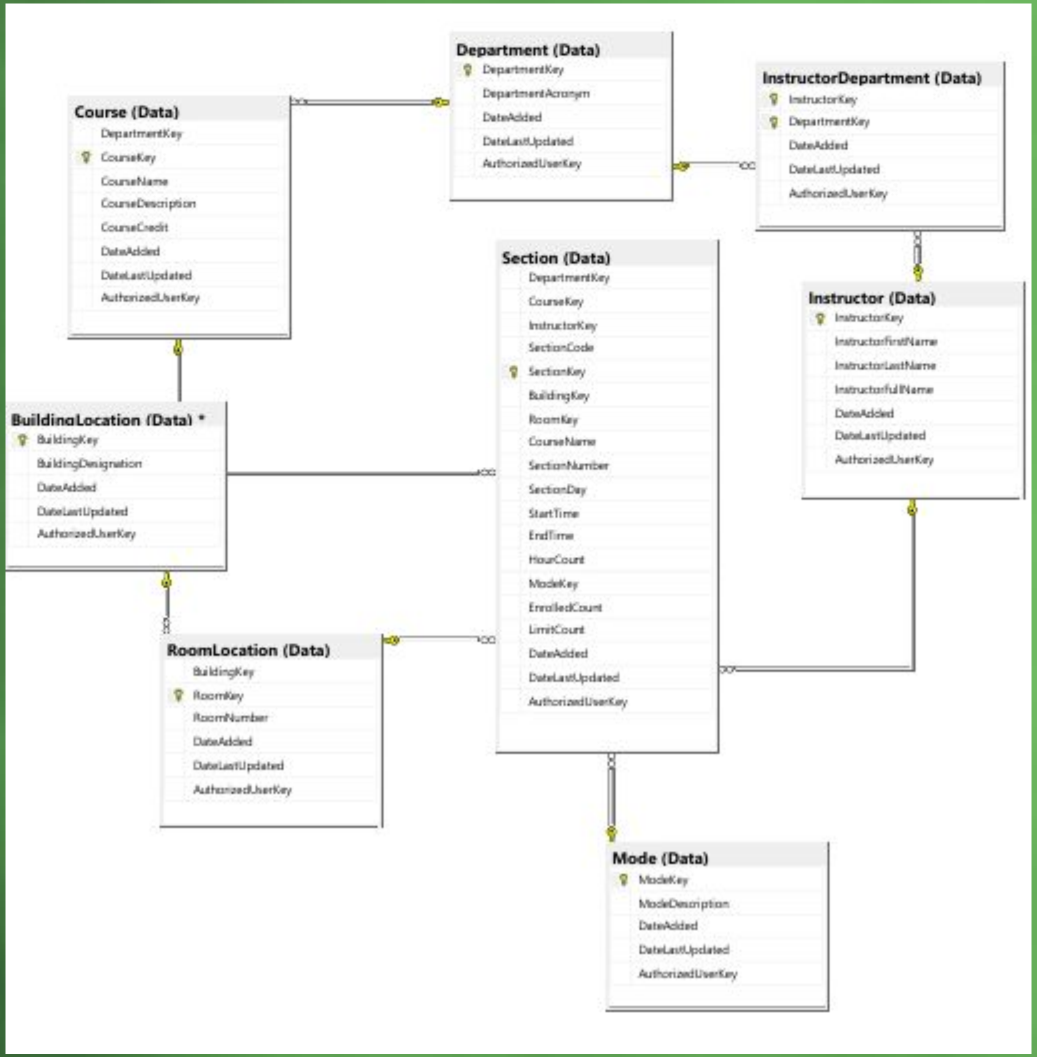
•Redgate Tools: Explain how SQL Prompt and SQL Doc with Author, Group number, Create date, and Description.

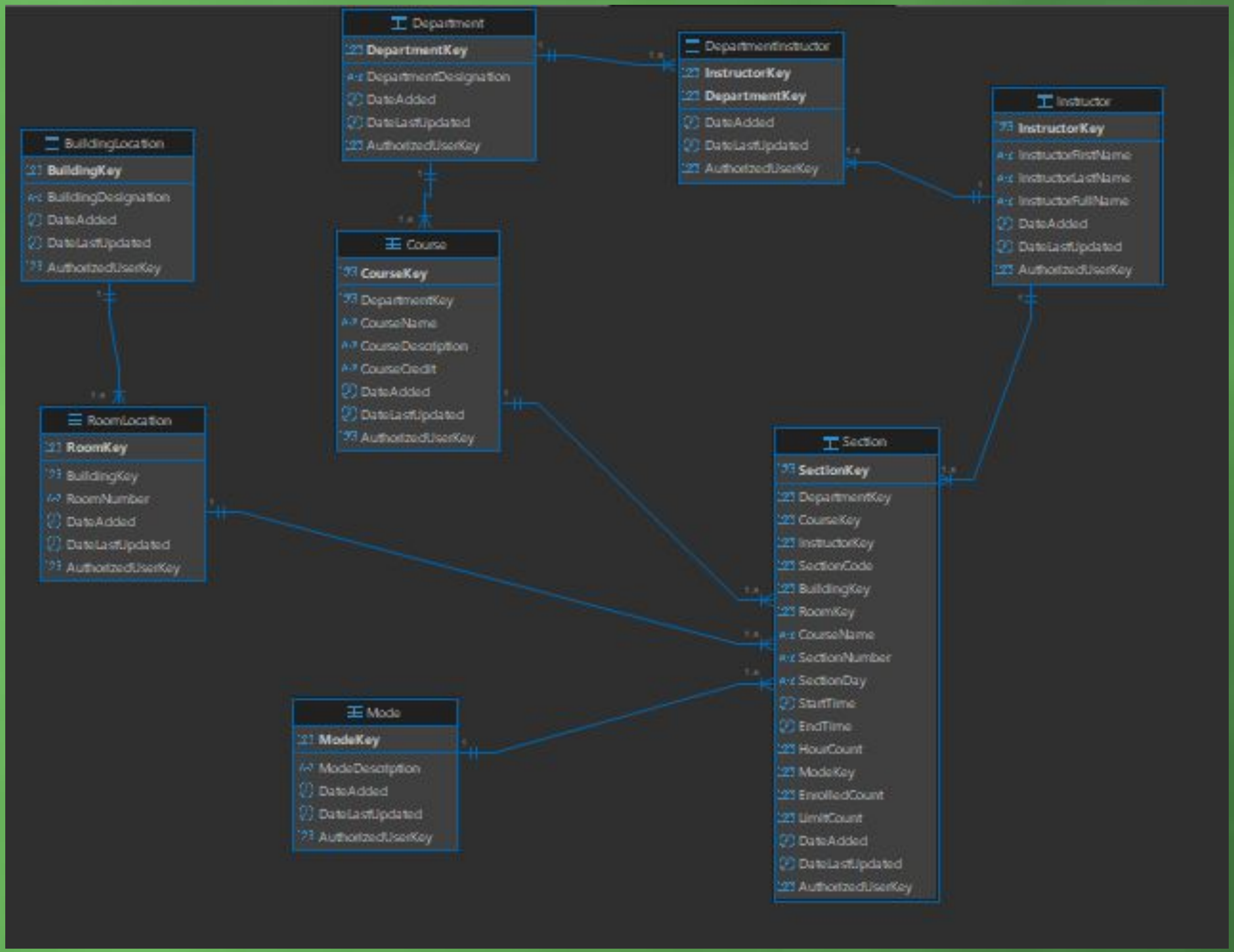
STEP 1: Our ERD setup



• [illegible] date, and Description.

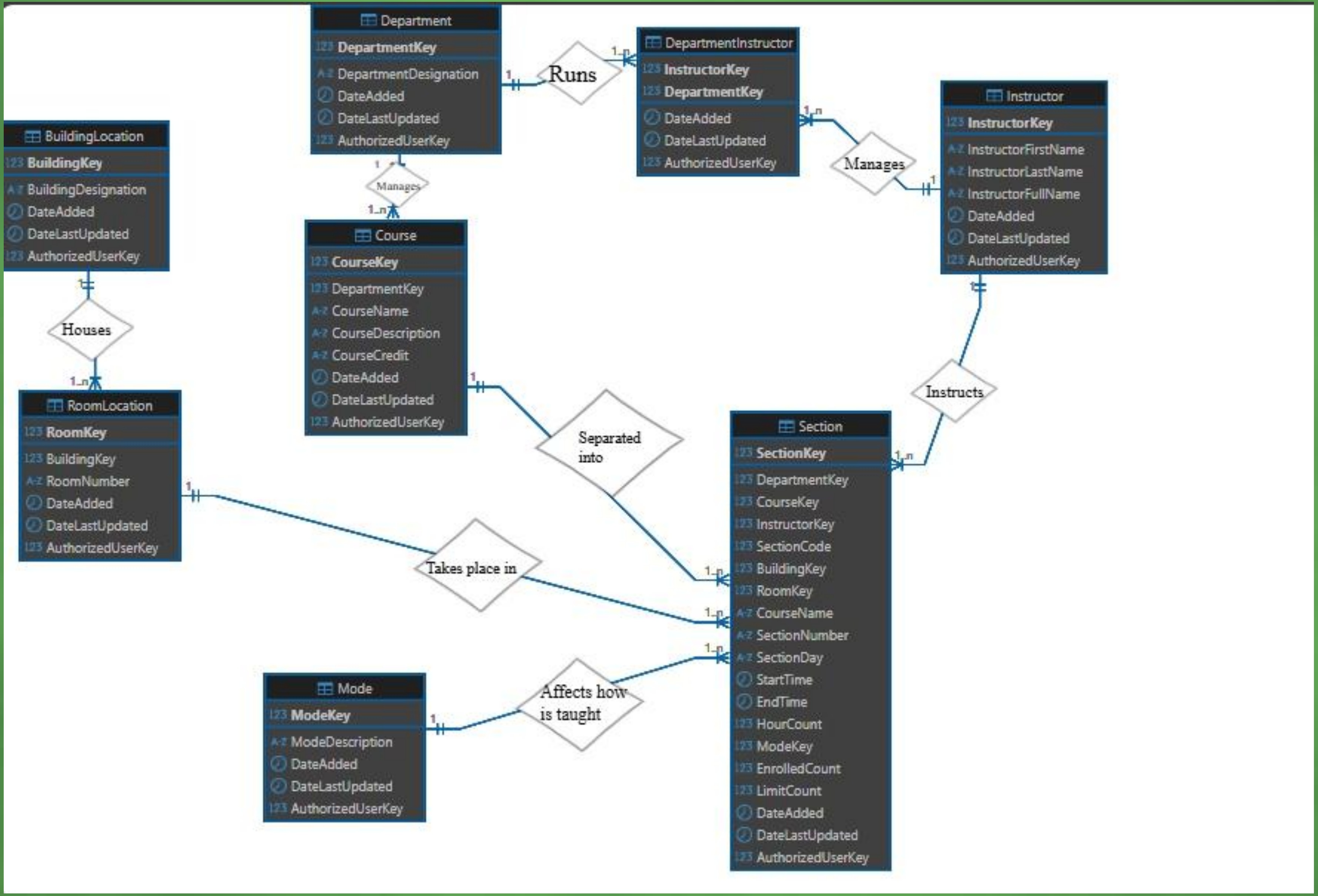
STEP 1: Our ERD setup





•Documentation: Explain every step and procedure… Tools: SQL Prompt and SQL Dev with Author, Group, Create date, and Description.

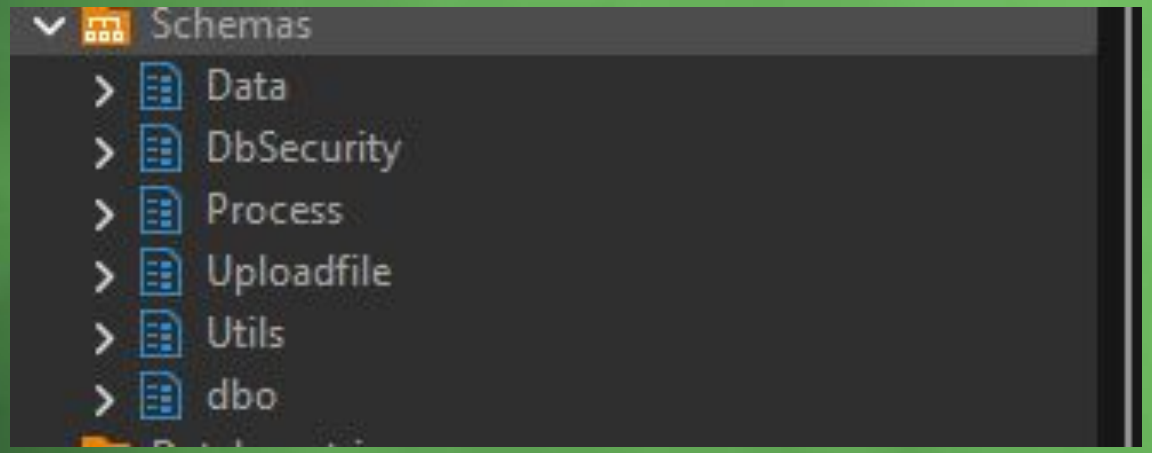
STEP 1: Our ERD setup



STEP 2: Schemas

```
--Step 1: It aint here(ER diagram)

--Step 2: Make our schemas so we know where our data goes.
CREATE SCHEMA [DbSecurity] AUTHORIZATION [dbo];
GO
CREATE SCHEMA [Process] AUTHORIZATION [dbo];
GO
CREATE SCHEMA [Udt] AUTHORIZATION [dbo];
GO
CREATE SCHEMA [Data] AUTHORIZATION [dbo]; -- NEW DATA SCHEMA
GO
```



This allows to set what paths each data type and table goes, allows for organization and decent structure. We specifically used a Star Schema structure as it seemed fitting for a multitable database

STEP 3: UDTs

```
--Step 3: Make Our udts so we can make our tables and data types easier
CREATE TYPE [Udt].[SurrogateKeyInt] FROM [INT] NOT NULL;
GO
CREATE TYPE [Udt].[CodeVarchar10] FROM [VARCHAR](10) NOT NULL;
GO
CREATE TYPE [Udt].[NameVarchar50] FROM [VARCHAR](50) NULL;
GO
CREATE TYPE [Udt].[AtomicNameVarchar30] FROM [VARCHAR](30) NOT NULL;
GO
CREATE TYPE [Udt].[AddressVarchar50] FROM [VARCHAR](50) NULL;
GO
CREATE TYPE [Udt].[DescriptionVarchar100] FROM [VARCHAR](100) NOT NULL;
GO
CREATE TYPE [Udt].[DayVarchar20] FROM [VARCHAR](20) NOT NULL;
GO
CREATE TYPE [Udt].[CountInt] FROM [INT] NOT NULL;
GO
CREATE TYPE [Udt].[TimeType] FROM [TIME](7) NOT NULL;
GO
CREATE TYPE [Udt].[DateTimeAudit] FROM [DATETIME2](7) NOT NULL;
GO
CREATE TYPE [Udt].[AuthorizationKey] FROM [INT] NOT NULL;
GO
```

We want to make a set of reusable UDTS.

They enforces consistency in data type and size across all tables and procedures, makes maintenance easier for us and maintains our schema clarity

Imagine using parts in a kit or catalog to make a machine in a assembly line, its like that.

STEP 4: Our Actual tables

```
--Step 4: Making our tables based on the diagram from Step 1

-- [Data].[BuildingLocation]
CREATE TABLE [Data].[BuildingLocation](
[BuildingKey] [Udt].[SurrogateKeyInt] IDENTITY(1,1) NOT NULL,
[BuildingDesignation] [Udt].[CodeVarchar10], -- Renamed from BuildingAcronym
[DateAdded] [Udt].[DateTimeAudit] DEFAULT (sysdatetime()),
[DateLastUpdated] [Udt].[DateTimeAudit] DEFAULT (sysdatetime()),
[AuthorizedUserKey] [Udt].[AuthorizationKey],
CONSTRAINT [PK_BuildingLocation_BuildingKey] PRIMARY KEY CLUSTERED ([BuildingKey] ASC)
) ON [PRIMARY]
GO

-- [Data].[Department]
CREATE TABLE [Data].[Department]( -- Table name is now Department
[DepartmentKey] [Udt].[SurrogateKeyInt] IDENTITY(1,1) NOT NULL,
[DepartmentDesignation] [Udt].[CodeVarchar10], -- Renamed from DepartmentAcronym
[DateAdded] [Udt].[DateTimeAudit] DEFAULT (sysdatetime()),
[DateLastUpdated] [Udt].[DateTimeAudit] DEFAULT (sysdatetime()),
[AuthorizedUserKey] [Udt].[AuthorizationKey],
CONSTRAINT [PK_Department_DepartmentKey] PRIMARY KEY CLUSTERED ([DepartmentKey] ASC)
) ON [PRIMARY]
GO

-- [Data].[Instructor]
CREATE TABLE [Data].[Instructor]( -- Table name is now Instructor
[InstructorKey] [Udt].[SurrogateKeyInt] IDENTITY(1,1) NOT NULL,
[InstructorFirstName] [Udt].[AtomicNameVarchar30],
[InstructorLastName] [Udt].[AtomicNameVarchar30],
[InstructorFullName] AS (CONCAT([InstructorLastName], ', ', [InstructorFirstName])) PERSISTED,
[DateAdded] [Udt].[DateTimeAudit] DEFAULT (sysdatetime()),
[DateLastUpdated] [Udt].[DateTimeAudit] DEFAULT (sysdatetime()),
[AuthorizedUserKey] [Udt].[AuthorizationKey],
CONSTRAINT [PK_Instructor_InstructorKey] PRIMARY KEY NONCLUSTERED ([InstructorKey] ASC)
```

```
-- [DbSecurity].[UserAuthorization]
CREATE TABLE [DbSecurity].[UserAuthorization](
[UserAuthorizationKey] [Udt].[AuthorizationKey] IDENTITY(1,1) NOT NULL,
[ProjectName] [Udt].[NameVarchar50] DEFAULT ('PROJECT 3: QueensClassSchedule DB RECONSTRUCTION
[AuditorLastName] [Udt].[AtomicNameVarchar30],
[AuditorFirstName] [Udt].[AtomicNameVarchar30],
[DateAdded] [Udt].[DateTimeAudit] DEFAULT (sysdatetime()),
[DateLastUpdated] [Udt].[DateTimeAudit] DEFAULT (sysdatetime()),
PRIMARY KEY CLUSTERED ([UserAuthorizationKey] ASC)
) ON [PRIMARY]
GO

-- [Process].[WorkflowSteps]
CREATE TABLE [Process].[WorkflowSteps](
[WorkFlowStepKey] [Udt].[SurrogateKeyInt] IDENTITY(1,1) NOT NULL,
[WorkFlowStepDescription] [Udt].[DescriptionVarchar100],
[WorkFlowStepTableRowCount] [Udt].[CountInt] DEFAULT ((0)),
[StartingDateTime] [Udt].[DateTimeAudit] DEFAULT (sysdatetime()),
[EndingDateTime] [Udt].[DateTimeAudit] DEFAULT (sysdatetime()),
[ClassTime] CHAR(5) NULL DEFAULT ('10:45'),
[UserAuthorizationKey] [Udt].[AuthorizationKey] NOT NULL,
[GroupMemberLastName] [Udt].[AtomicNameVarchar30] DEFAULT ('Your last name'),
[GroupMemberFirstName] [Udt].[AtomicNameVarchar30] DEFAULT ('Your first name'),
PRIMARY KEY CLUSTERED ([WorkFlowStepKey] ASC)
) ON [PRIMARY]
GO
```

As seen in last slide, we made our actual tables from the ERD, which will denote every aspect for our course selection. We will use procedures and constraints to make sure everything is secure.

We also will implement a security table. These tables are essential for the operation of auditing data for the course list(using the process table we made for the project), as we have authorization keys and the dates for any and all updates for each table implemented.

STEP 5: Store and Load Data

We gotta create and load our procedures are implemented to grab raw, messy class data from our Uploadfile.Current Semester, clean it up by finding unique bits of information (like the department code or the instructor's name), and then put that clean, categorized data into dedicated, smaller tables ([Data].[Department], [Data].[Instructor], etc.).

(AddForeignKeys/DropForeignKeys) temporarily turn off the rules (foreign keys) that link the tables together so we can put data in, and then they turn the rules back on to make sure all the connections and links are correct.

We used Patindex to tell the system exactly where to start and stop cutting up messy data to put it into neat, structured columns.

```sql
-- Workflow Stored Procedures (Process Schema)
CREATE PROCEDURE [Process].[ShowWorkflowSteps]
AS
BEGIN
  SELECT *
  FROM Process.WorkflowSteps
  SELECT CONCAT(SUM(B.time_elapsed), ' MILLISECONDS') AS TotalTimeElapsed
  FROM
  (SELECT time_elapsed = DATEDIFF(MILLISECOND, A.StartingDateTime, A.EndingDateTime)
  FROM Process.WorkflowSteps AS A) AS B
END;
GO
```

```sql
-- Stored procedure to add all foreign keys (In our DATA Schema)
CREATE PROCEDURE [Data].[AddForeignKeys]
@AuthorizedUserKey [Udt].[AuthorizationKey]
AS
```

```sql
-- Stored procedure to drop all foreign keys (Again, in our data schema)
CREATE PROCEDURE [Data].[DropForeignKeys]
@AuthorizedUserKey [Udt].[AuthorizationKey]
AS
BEGIN
ALTER TABLE [Data].Section DROP CONSTRAINT IF EXISTS FK_Section_Instructor;
ALTER TABLE [Data].Section DROP CONSTRAINT IF EXISTS FK_Section_Mode;
ALTER TABLE [Data].Section DROP CONSTRAINT IF EXISTS FK_Section_Course;
ALTER TABLE [Data].Section DROP CONSTRAINT IF EXISTS FK_Section_RoomLocation;
ALTER TABLE [Data].Course DROP CONSTRAINT IF EXISTS FK_Course_Department;
ALTER TABLE [Data].DepartmentInstructor DROP CONSTRAINT IF EXISTS FK_DI_Department; -- Renamed from InstructorDepartment
ALTER TABLE [Data].DepartmentInstructor DROP CONSTRAINT IF EXISTS FK_DI_Instructor; -- Renamed from InstructorDepartment
ALTER TABLE [Data].RoomLocation DROP CONSTRAINT IF EXISTS FK_RoomLocation_BuildingLocation;
END;
GO

-- Load Procedures(should transfer data to the tablesP

CREATE PROCEDURE [Data].[LoadBuildingLocation]
  @AuthorizedUserKey [Udt].[AuthorizationKey]
AS
BEGIN
  SET NOCOUNT ON;
  DECLARE @StartDateTime AS [Udt].[DateTimeAudit], @EndDateTime AS [Udt].[DateTimeAudit];
  SET @StartDateTime = SYSDATETIME()

  INSERT INTO [Data].BuildingLocation (BuildingDesignation, AuthorizedUserKey) -- Renamed column
  SELECT DISTINCT
  REPLACE(LEFT([Location], CHARINDEX(' ', [Location])), ' ', ''),
  @AuthorizedUserKey
  FROM Uploadfile.CurrentSemesterCourseOfferings;
```

Final Result

All of our data should've been filled from the load procedure and process workflow should showcase each operation that has occurred.

Results | Messages

	TableHeader	Semester	Sec	Code	Course (hr, crd)	Description	Day	Time	Instructor
1	--- Source Data (Uploadfile.CurrentSemesterCourse...	Current Semester	02	37366	ACCT 100 (3, 3)	Fin & Mgr Acct	T, TH	3:10 PM - 4:25 PM	Milo, Mich
2	--- Source Data (Uploadfile.CurrentSemesterCourse...	Current Semester	03	37823	ACCT 100 (3, 3)	Fin & Mgr Acct	M	3:10 PM - 6:00 PM	Ho, Vivian
3	--- Source Data (Uploadfile.CurrentSemesterCourse...	Current Semester	01	37365	ACCT 100 (3, 3)	Fin & Mgr Acct	T, TH	10:45 AM - 12:00 PM	Milo, Mich
4	--- Source Data (Uploadfile.CurrentSemesterCourse...	Current Semester	06	7351	ACCT 101 (4, 3)	Int Theo & Prac Acct 1	T, TH	12:10 PM - 2:00 PM	Feisullin, A
5	--- Source Data (Uploadfile.CurrentSemesterCourse...	Current Semester	12	7357	ACCT 101 (4, 3)	Int Theo & Prac Acct 1	SU	8:20 AM - 12:00 PM	Mintz, Cha
6	--- Source Data (Uploadfile.CurrentSemesterCourse...	Current Semester	11	7356	ACCT 101 (4, 3)	Int Theo & Prac Acct 1	S	8:20 AM - 12:00 PM	Chan, Jos
7	--- Source Data (Uploadfile.CurrentSemesterCourse...	Current Semester	10	7355	ACCT 101 (4, 3)	Int Theo & Prac Acct 1	F	6:30 PM - 10:30 PM	Solarsh, E
8	--- Source Data (Uploadfile.CurrentSemesterCourse...	Current Semester	09	7354	ACCT 101 (4, 3)	Int Theo & Prac Acct 1	T, TH	8:50 PM - 10:30 PM	Zapf, Mich

	TableHeader	BuildingKey	BuildingDesignation	DateAdded	DateLastUpdated	AuthorizedUserKey
1	--- BuildingLocation Data ---	1		2025-12-16 16:05:12.9151350	2025-12-16 16:05:12.9361940	1
2	--- BuildingLocation Data ---	2	AR	2025-12-16 16:05:12.9151350	2025-12-16 16:05:12.9361940	1
3	--- BuildingLocation Data ---	3	CD	2025-12-16 16:05:12.9151350	2025-12-16 16:05:12.9361940	1
4	--- BuildingLocation Data ---	4	CH	2025-12-16 16:05:12.9151350	2025-12-16 16:05:12.9361940	1
5	--- BuildingLocation Data ---	5	DY	2025-12-16 16:05:12.9151350	2025-12-16 16:05:12.9361940	1

Query executed successfully. | localhost, 13001 (17.0 RC0) | sa (52) | QueensClassSchedule | 00:00:01 | 9,939 rows

Results | Messages

	WorkFlowStepKey	WorkFlowStepDescription	WorkFlowStepTableRowCount	StartingDateTime	EndingDateTime	ClassTime	U
2	2	Populate Department Table (PATINDEX Fix)	85	2025-12-16 13:18:05.7940552	2025-12-16 13:18:05.8570817	10:45	1
3	3	Populate Instructor Table	1597	2025-12-16 13:18:05.8948949	2025-12-16 13:18:05.9536774	10:45	1
4	4	Populate Mode Table	0	2025-12-16 13:18:05.9789452	2025-12-16 13:18:05.9872150	10:45	1
5	5	Populate RoomLocation Table	319	2025-12-16 13:18:06.0208861	2025-12-16 13:18:06.0546163	10:45	1
6	6	Populate Course Table (PATINDEX Fix)	1627	2025-12-16 13:18:06.1089615	2025-12-16 13:18:06.2269965	10:45	1
7	7	Populate DepartmentInstructor Table	1755	2025-12-16 13:18:06.2773353	2025-12-16 13:18:06.3621808	10:45	1
8	8	Populate Section Table (PATINDEX Fix)	0	2025-12-16 13:18:06.5850255	2025-12-16 13:18:06.5935122	10:45	1

• Pedagogical Tools: Explain how SQL Prompt and SQL Doc enhanced group productivity.

• Documentation: Document every stored procedure with Author, Procedure, Create date, and Description.

Final Result

Building

8 % No issues found Ln

Results | Messages

	BuildingKey	BuildingDesignation	DateAdded	DateLastUpdated	AuthorizedUserKey
1	1		2025-12-16 22:13:49.9417132	2025-12-16 22:13:49.9543167	1
2	2	AR	2025-12-16 22:13:49.9417132	2025-12-16 22:13:49.9543167	1
3	3	CD	2025-12-16 22:13:49.9417132	2025-12-16 22:13:49.9543167	1
4	4	CH	2025-12-16 22:13:49.9417132	2025-12-16 22:13:49.9543167	1
5	5	DY	2025-12-16 22:13:49.9417132	2025-12-16 22:13:49.9543167	1
6	6	FG	2025-12-16 22:13:49.9417132	2025-12-16 22:13:49.9543167	1
7	7	GB	2025-12-16 22:13:49.9417132	2025-12-16 22:13:49.9543167	1
8	8	GC	2025-12-16 22:13:49.9417132	2025-12-16 22:13:49.9543167	1
9	9	GT	2025-12-16 22:13:49.9417132	2025-12-16 22:13:49.9543167	1
10	10	HH	2025-12-16 22:13:49.9417132	2025-12-16 22:13:49.9543167	1
11	11	IB	2025-12-16 22:13:49.9417132	2025-12-16 22:13:49.9543167	1

Course

Results | Messages

	DepartmentKey	CourseKey	CourseName	CourseDescription	CourseCredit	DateAdded	DateLastUpdated	AuthorizedUserKey
1	1	1	341	Acct Info Syst		2025-12-16 22:13:50.2742022	2025-12-16 22:13:50.3666088	1
2	1	2	748	Adv Acct Info Systms		2025-12-16 22:13:50.2742022	2025-12-16 22:13:50.3666088	1
3	1	3	723	Adv Auditing Theory		2025-12-16 22:13:50.2742022	2025-12-16 22:13:50.3666088	1
4	1	4	712	Adv Fin Acct Theory		2025-12-16 22:13:50.2742022	2025-12-16 22:13:50.3666088	1
5	1	5	752	Adv Stdy In Bus Law		2025-12-16 22:13:50.2742022	2025-12-16 22:13:50.3666088	1
6	1	6	311	Advcd Acct		2025-12-16 22:13:50.2742022	2025-12-16 22:13:50.3666088	1
7	1	7	321	Auditing 1		2025-12-16 22:13:50.2742022	2025-12-16 22:13:50.3666088	1
8	1	8	322	Auditing 2		2025-12-16 22:13:50.2742022	2025-12-16 22:13:50.3666088	1
9	1	9	362	Business Law 2		2025-12-16 22:13:50.2742022	2025-12-16 22:13:50.3666088	1
10	1	10	362W	Business Law 2		2025-12-16 22:13:50.2742022	2025-12-16 22:13:50.3666088	1
11	1	11	363	Business Law 3		2025-12-16 22:13:50.2742022	2025-12-16 22:13:50.3666088	1

• … date, and Description.

Final Result

Department

78 % | No issues found | Ln: 1 | Ch: 2 | SPC

Results | Messages

	DepartmentKey	DepartmentDesignation	DateAdded	DateLastUpdated	AuthorizedUserKey
1	1	ACCT	2025-12-16 22:13:50.0131509	2025-12-16 22:13:50.0469711	1
2	2	AFST	2025-12-16 22:13:50.0131509	2025-12-16 22:13:50.0469711	1
3	3	AMST	2025-12-16 22:13:50.0131509	2025-12-16 22:13:50.0469711	1
4	4	ANTH	2025-12-16 22:13:50.0131509	2025-12-16 22:13:50.0469711	1
5	5	ARAB	2025-12-16 22:13:50.0131509	2025-12-16 22:13:50.0469711	1
6	6	ARTH	2025-12-16 22:13:50.0131509	2025-12-16 22:13:50.0469711	1
7	7	ARTS	2025-12-16 22:13:50.0131509	2025-12-16 22:13:50.0469711	1
8	8	ASTR	2025-12-16 22:13:50.0131509	2025-12-16 22:13:50.0469711	1
9	9	BALA	2025-12-16 22:13:50.0131509	2025-12-16 22:13:50.0469711	1
10	10	BIOCH	2025-12-16 22:13:50.0131509	2025-12-16 22:13:50.0469711	1
11	11	BIOL	2025-12-16 22:13:50.0131509	2025-12-16 22:13:50.0469711	1

DepartmentInstructor(which is our faculty department for the degree department)

Results | Messages

	DepartmentKey	CourseKey	CourseName	CourseDescription	CourseCredit	DateAdded	DateLastUpdated	AuthorizedUserKey
1	1	1	341	Acct Info Syst		2025-12-16 22:13:50.2742022	2025-12-16 22:13:50.3666088	1
2	1	2	748	Adv Acct Info Systms		2025-12-16 22:13:50.2742022	2025-12-16 22:13:50.3666088	1
3	1	3	723	Adv Auditing Theory		2025-12-16 22:13:50.2742022	2025-12-16 22:13:50.3666088	1
4	1	4	712	Adv Fin Acct Theory		2025-12-16 22:13:50.2742022	2025-12-16 22:13:50.3666088	1
5	1	5	752	Adv Stdy In Bus Law		2025-12-16 22:13:50.2742022	2025-12-16 22:13:50.3666088	1
6	1	6	311	Advcd Acct		2025-12-16 22:13:50.2742022	2025-12-16 22:13:50.3666088	1
7	1	7	321	Auditing 1		2025-12-16 22:13:50.2742022	2025-12-16 22:13:50.3666088	1
8	1	8	322	Auditing 2		2025-12-16 22:13:50.2742022	2025-12-16 22:13:50.3666088	1
9	1	9	362	Business Law 2		2025-12-16 22:13:50.2742022	2025-12-16 22:13:50.3666088	1
10	1	10	362W	Business Law 2		2025-12-16 22:13:50.2742022	2025-12-16 22:13:50.3666088	1
11	1	11	363	Business Law 3		2025-12-16 22:13:50.2742022	2025-12-16 22:13:50.3666088	1

• Redgate Tools: … date, and Description.

Final Result

Instructor

78 % | No issues found | Ln: 1 | Ch: 1 | SPC | CRLF

Results | Messages

	InstructorKey	InstructorFirstName	InstructorLastName	InstructorFullName	DateAdded	DateLastUpdated	AuthorizedUserKey
1	1			,	2025-12-16 22:13:50.0890054	2025-12-16 22:13:50.1101097	1
2	2	Aaron	Freundschuh	Freundschuh, Aaron	2025-12-16 22:13:50.0890054	2025-12-16 22:13:50.1101097	1
3	3	Abbas	Husain	Husain, Abbas	2025-12-16 22:13:50.0890054	2025-12-16 22:13:50.1101097	1
4	4	Abderrahim	Chouaib	Chouaib, Abderrahim	2025-12-16 22:13:50.0890054	2025-12-16 22:13:50.1101097	1
5	5	Abeer	Mohamed	Mohamed, Abeer	2025-12-16 22:13:50.0890054	2025-12-16 22:13:50.1101097	1
6	6	Abigail	Doukhan	Doukhan, Abigail	2025-12-16 22:13:50.0890054	2025-12-16 22:13:50.1101097	1
7	7	Abraham	Aharonoff	Aharonoff, Abraham	2025-12-16 22:13:50.0890054	2025-12-16 22:13:50.1101097	1
8	8	Abraham	Walker	Walker, Abraham	2025-12-16 22:13:50.0890054	2025-12-16 22:13:50.1101097	1
9	9	Ada	Price	Price, Ada	2025-12-16 22:13:50.0890054	2025-12-16 22:13:50.1101097	1
10	10	Adam	Davison	Davison, Adam	2025-12-16 22:13:50.0890054	2025-12-16 22:13:50.1101097	1
11	11	Adam	Kapelner	Kapelner, Adam	2025-12-16 22:13:50.0890054	2025-12-16 22:13:50.1101097	1

Query executed successfully. | localhost, 13001 (17.0 RC0) | sa (111) | QueensClassSchedule | 00:00:00 | 1,000 rows

Mode

```sql
SELECT TOP (1000) [ModeKey]
      ,[ModeDescription]
      ,[DateAdded]
      ,[DateLastUpdated]
      ,[AuthorizedUserKey]
  FROM [QueensClassSchedule].[Data].[Mode]
```

% | No issues found

Results | Messages

	ModeKey	ModeDescription	DateAdded	DateLastUpdated	AuthorizedUserKey
	1	Online	2025-12-16 22:13:50.1523506	2025-12-16 22:13:50.1649429	1
	2	In-Person	2025-12-16 22:13:50.1523506	2025-12-16 22:13:50.1649429	1
	3	Hybrid	2025-12-16 22:13:50.1523506	2025-12-16 22:13:50.1649429	1
	4	Web-Enhanced	2025-12-16 22:13:50.1523506	2025-12-16 22:13:50.1649429	1
	5	Online	2025-12-16 22:15:31.3890192	2025-12-16 22:15:31.4146043	3
	6	In-Person	2025-12-16 22:15:31.3890192	2025-12-16 22:15:31.4146043	3
	7	Hybrid	2025-12-16 22:15:31.3890192	2025-12-16 22:15:31.4146043	3
	8	Web-Enhanced	2025-12-16 22:15:31.3890192	2025-12-16 22:15:31.4146043	3

• [illegible] date, and Description.

Final Result

Room

% No issues found Ln: 1 Ch

Results | Messages

	BuildingKey	RoomKey	RoomNumber	DateAdded	DateLastUpdated	AuthorizedUserKey
	1	1		2025-12-16 22:13:50.1984749	2025-12-16 22:13:50.2153852	1
	2	2	TC03	2025-12-16 22:13:50.1984749	2025-12-16 22:13:50.2153852	1
	3	3	134	2025-12-16 22:13:50.1984749	2025-12-16 22:13:50.2153852	1
	4	4	102	2025-12-16 22:13:50.1984749	2025-12-16 22:13:50.2153852	1
	4	5	108	2025-12-16 22:13:50.1984749	2025-12-16 22:13:50.2153852	1
	4	6	203	2025-12-16 22:13:50.1984749	2025-12-16 22:13:50.2153852	1
	4	7	204	2025-12-16 22:13:50.1984749	2025-12-16 22:13:50.2153852	1
	4	8	208	2025-12-16 22:13:50.1984749	2025-12-16 22:13:50.2153852	1

Section

78 % No issues found Ln: 1 Ch: 1 SPC CRLF

Results | Messages

	DepartmentKey	CourseKey	InstructorKey	SectionCode	SectionKey	BuildingKey	RoomKey	CourseName	SectionNumber	SectionDay	StartTime	EndTi
1	1	1	109	7493	24	17	180	341	01	S	13:00:00.0000000	16:00
2	1	1	109	7493	25	17	499	341	01	S	13:00:00.0000000	16:00
3	1	1	109	7493	26	41	818	341	01	S	13:00:00.0000000	16:00
4	1	1	1706	7493	27	17	180	341	01	S	13:00:00.0000000	16:00
5	1	1	1706	7493	28	17	499	341	01	S	13:00:00.0000000	16:00
6	1	1	1706	7493	29	41	818	341	01	S	13:00:00.0000000	16:00
7	1	2	1257	7562	30	17	189	748	01	W	18:30:00.0000000	21:20
8	1	2	1257	7562	31	17	508	748	01	W	18:30:00.0000000	21:20
9	1	2	1257	7562	32	41	827	748	01	W	18:30:00.0000000	21:20

[illegible] date, and Description.

Final Result

Security

No issues found Ln: 1 Ch: 1 SPC CRLF

Results Messages

	UserAuthorizationKey	ProjectName	AuditorLastName	AuditorFirstName	DateAdded	DateLast
	1	PROJECT 3: QueensClassSchedule DB RECONSTRUCTION	FahimEsfarJustinYousufSayantan	Johnson	2025-12-16 22:13:40.8429184	2025-12-
	2	PROJECT 3: QueensClassSchedule DB RECONSTRUCTION	FahimEsfarJustinYousufSayantan	Johnson	2025-12-16 22:15:15.8279492	2025-12-
	3	PROJECT 3: QueensClassSchedule DB RECONSTRUCTION	FahimEsfarJustinYousufSayantan	Johnson	2025-12-16 22:15:31.0509628	2025-12-

ProcessWorkflow

78 % No issues found Ln: 1 Ch: 1 SPC CRLF

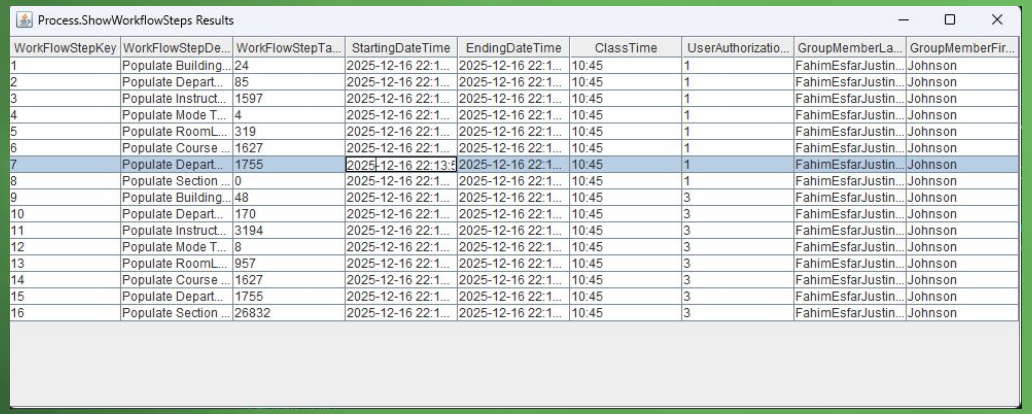
Results Messages

	WorkFlowStepKey	WorkFlowStepDescription	WorkFlowStepTableRowCount	StartingDateTime	EndingDateTime	ClassTime	UserAuth
1	1	Populate BuildingLocation Table	24	2025-12-16 22:13:49.9417132	2025-12-16 22:13:49.9628561	10:45	1
2	2	Populate Department Table	85	2025-12-16 22:13:50.0131509	2025-12-16 22:13:50.0555425	10:45	1
3	3	Populate Instructor Table	1597	2025-12-16 22:13:50.0848329	2025-12-16 22:13:50.1270205	10:45	1
4	4	Populate Mode Table	4	2025-12-16 22:13:50.1523506	2025-12-16 22:13:50.1732559	10:45	1
5	5	Populate RoomLocation Table	319	2025-12-16 22:13:50.1984749	2025-12-16 22:13:50.2280525	10:45	1
6	6	Populate Course Table	1627	2025-12-16 22:13:50.2742022	2025-12-16 22:13:50.3794511	10:45	1
7	7	Populate DepartmentInstructor Table	1755	2025-12-16 22:13:50.4260376	2025-12-16 22:13:50.4807669	10:45	1
8	8	Populate Section Table	0	2025-12-16 22:13:50.6780465	2025-12-16 22:13:50.7875044	10:45	1
9	9	Populate BuildingLocation Table	48	2025-12-16 22:15:31.1752463	2025-12-16 22:15:31.2178712	10:45	3

Bonus Round: JDBC-ing our data

One of the project requirements was to work with JDBC as a third party to access the process workflows.

We implemented it to access Process.usp_ShowWorkflowSteps but unfortunately due to time constraints, we couldn’t implement it to access the main l Project3.LoadQueensCourseSchedule .



WorkFlowStepKey	WorkFlowStepDe...	WorkFlowStepTa...	StartingDateTime	EndingDateTime	ClassTime	UserAuthorizatio...	GroupMemberLa...	GroupMemberFir...
1	Populate Building...	24	2025-12-16 22:1...	2025-12-16 22:1...	10:45	1	FahimEsfarJustin...	Johnson
2	Populate Depart...	85	2025-12-16 22:1...	2025-12-16 22:1...	10:45	1	FahimEsfarJustin...	Johnson
3	Populate Instruct...	1597	2025-12-16 22:1...	2025-12-16 22:1...	10:45	1	FahimEsfarJustin...	Johnson
4	Populate Mode T...	4	2025-12-16 22:1...	2025-12-16 22:1...	10:45	1	FahimEsfarJustin...	Johnson
5	Populate RoomL...	319	2025-12-16 22:1...	2025-12-16 22:1...	10:45	1	FahimEsfarJustin...	Johnson
6	Populate Course ...	1627	2025-12-16 22:1...	2025-12-16 22:1...	10:45	1	FahimEsfarJustin...	Johnson
7	Populate Depart...	1755	2025-12-16 22:13:5	2025-12-16 22:1...	10:45	1	FahimEsfarJustin...	Johnson
8	Populate Section ...	0	2025-12-16 22:1...	2025-12-16 22:1...	10:45	1	FahimEsfarJustin...	Johnson
9	Populate Building...	48	2025-12-16 22:1...	2025-12-16 22:1...	10:45	3	FahimEsfarJustin...	Johnson
10	Populate Depart...	170	2025-12-16 22:1...	2025-12-16 22:1...	10:45	3	FahimEsfarJustin...	Johnson
11	Populate Instruct...	3194	2025-12-16 22:1...	2025-12-16 22:1...	10:45	3	FahimEsfarJustin...	Johnson
12	Populate Mode T...	8	2025-12-16 22:1...	2025-12-16 22:1...	10:45	3	FahimEsfarJustin...	Johnson
13	Populate RoomL...	957	2025-12-16 22:1...	2025-12-16 22:1...	10:45	3	FahimEsfarJustin...	Johnson
14	Populate Course ...	1627	2025-12-16 22:1...	2025-12-16 22:1...	10:45	3	FahimEsfarJustin...	Johnson
15	Populate Depart...	1755	2025-12-16 22:1...	2025-12-16 22:1...	10:45	3	FahimEsfarJustin...	Johnson
16	Populate Section ...	26832	2025-12-16 22:1...	2025-12-16 22:1...	10:45	3	FahimEsfarJustin...	Johnson

Conclusion

We definitely had some setbacks, especially since we started this after another project and worked on it during preparation for/after a final. But we believe our hard work atleast gave us a good learning experience.

Teamwork & Collaboration

- We clearly defined and divided the workload equally.

Setbacks & Problem-Solving

- We faced challenges with both load procedures, which required additional research and troubleshooting.
- JDBC functionality could not be fully completed, highlighting technical limitations we encountered during development.
- These setbacks taught us resilience and the importance of adapting quickly when facing unexpected issues along with researching issues.

Final Outcome

- Despite challenges, the collaborative effort made the project is still successful in that its functional with mostof the requirements meant.
- The reconstructed database is clean, fast, and ready for production and viewing atleast

[illegible] date, and Description.

Sources

Besides our textbook and the document for project requirements given by Proffesor H, we used these sources cause we were stumped in a few areas:

- https://learn.microsoft.com/en-us/sql/t-sql/functions/row-number-transact-sql
- Yes, we know Patindex is in the first chapter, this article helped by explaining it more in detail: https://learn.microsoft.com/en-us/sql/t-sql/functions/patindex-transact-sql
- https://learn.microsoft.com/en-us/sql/relational-databases/stored-procedures/stored-procedures-database-engine
- Dimensional Modeling Principles (Star Schema): https://medium.com/@ilkererkek/from-stars-to-snowflakes-deciphering-data-warehouses-and-database-design-f68184200672
- Fahim took Proffesor Xinying Chyn's 331 course last year and did a similar project using JDBC and Mysql on AWS. Unfortunately, he cannot find the youtube videos you used to setup JDBC(its simple, its just downloading the jar, butting it into either the build configuration(if you are using Eclipse) or referenced libraries(Vscode) along with the classpath.