Contents

Project overview to convert QueensClassScheduleSpring2017 Data into an ERD design and load the data

1. You will use SQLDBM to design your database.
2. You will design and create a new database (`QueensClassScheduleSpring2019`) from the single table (`Uploadfile.CoursesSpring2019`) on your local machine.
3. You will add additional columns to all tables in this project
4. You create a table called Process.WorkflowStep
5. Document your stored procedures
6. You will create a stored procedure called Process.usp_TrackWorkFlow
7. You will create stored procedures to load each of the individual tables into each of the tables based upon your ERD design just as you did in project 2.
8. Completion create a stored procedure Process.usp_Show WorkflowStep of a query of the Process.WorkflowStep table.
9. Upload the final design and implementation into your database on OCCAM\DBCLASS
10. Create one PowerPoint with voice annotation describing the work and design decisions.

Develop an ERD model in the SQL Diagram editor

Read Chapter 1 in the textbook to review

1. Pages 7 through 10 on "Normalization and the benefits of constraints."
2. Pages 19 through 25 on "Creating tables and defining data integrity"

Inspect the data

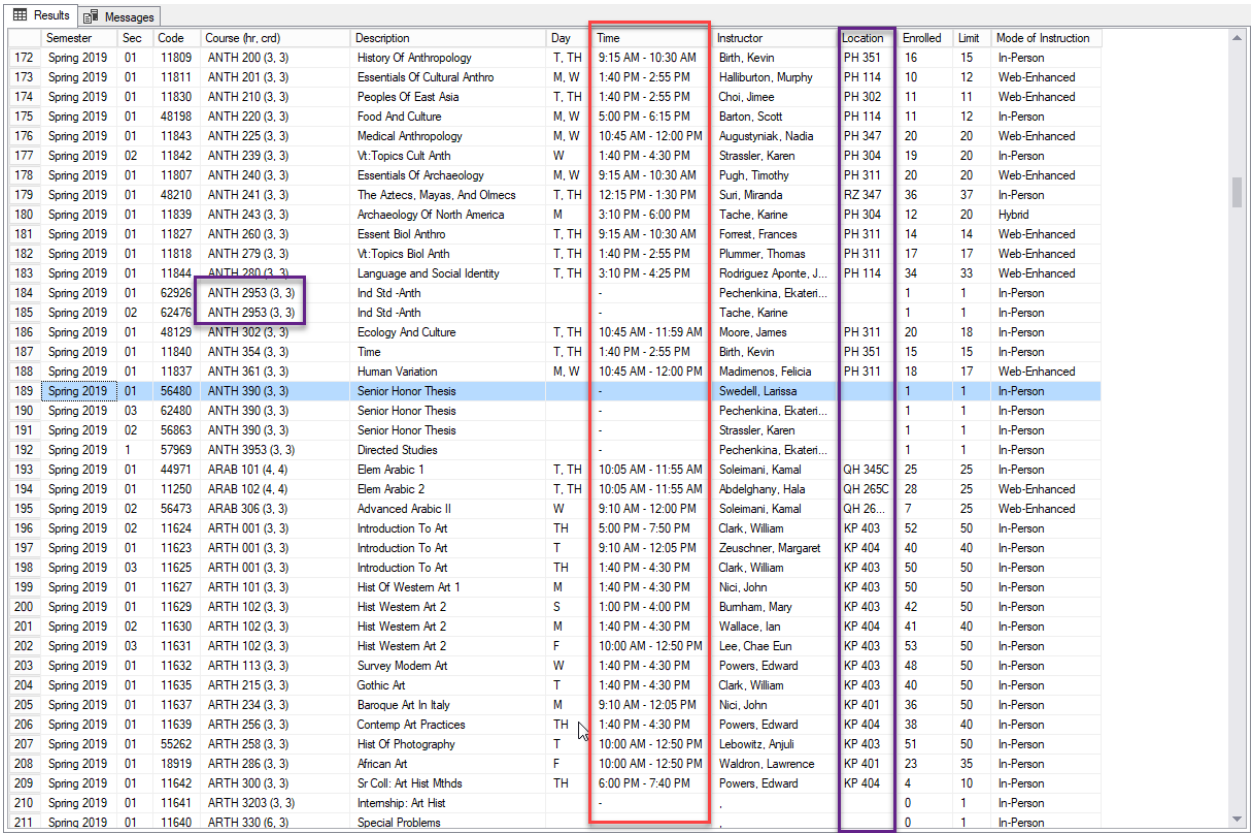
```
/****** Script for SelectTopNRows command from SSMS  ******/
select top (1000)
      'Spring 2019' as Semester
    , [Sec]
    , [Code]
    , [Course (hr, crd)]
    , [Description]
    , [Day]
    , [Time]
    , [Instructor]
    , [Location]
    , [Enrolled]
    , [Limit]
    , [Mode of Instruction]
from [QueensCollegeSchedulSpring2019].[Uploadfile].[CoursesSpring2019];
```

100 %

Results | Messages

	Semester	Sec	Code	Course (hr, crd)	Description	Day	Time	Instructor	Location	Enrolled	Limit	Mode of Instruction
172	Spring 2019	01	11809	ANTH 200 (3, 3)	History Of Anthropology	T, TH	9:15 AM - 10:30 AM	Birth, Kevin	PH 351	16	15	In-Person
173	Spring 2019	01	11811	ANTH 201 (3, 3)	Essentials Of Cultural Anthro	M, W	1:40 PM - 2:55 PM	Halliburton, Murphy	PH 114	10	12	Web-Enhanced
174	Spring 2019	01	11830	ANTH 210 (3, 3)	Peoples Of East Asia	T, TH	1:40 PM - 2:55 PM	Choi, Jimee	PH 302	11	11	Web-Enhanced
175	Spring 2019	01	48198	ANTH 220 (3, 3)	Food And Culture	M, W	5:00 PM - 6:15 PM	Barton, Scott	PH 114	11	12	In-Person
176	Spring 2019	01	11843	ANTH 225 (3, 3)	Medical Anthropology	M, W	10:45 AM - 12:00 PM	Augustyniak, Nadia	PH 347	20	20	Web-Enhanced
177	Spring 2019	02	11842	ANTH 239 (3, 3)	Vt:Topics Cult Anth	W	1:40 PM - 4:30 PM	Strassler, Karen	PH 304	19	20	In-Person
178	Spring 2019	01	11807	ANTH 240 (3, 3)	Essentials Of Archaeology	M, W	9:15 AM - 10:30 AM	Pugh, Timothy	PH 311	20	20	Web-Enhanced
179	Spring 2019	01	48210	ANTH 241 (3, 3)	The Aztecs, Mayas, And Olmecs	T, TH	12:15 PM - 1:30 PM	Suri, Miranda	RZ 347	36	37	In-Person
180	Spring 2019	01	11839	ANTH 243 (3, 3)	Archaeology Of North America	M	3:10 PM - 6:00 PM	Tache, Karine	PH 304	12	20	Hybrid
181	Spring 2019	01	11827	ANTH 260 (3, 3)	Essent Biol Anthro	T, TH	9:15 AM - 10:30 AM	Forrest, Frances	PH 311	14	14	Web-Enhanced
182	Spring 2019	01	11818	ANTH 279 (3, 3)	Vt:Topics Biol Anth	T, TH	1:40 PM - 2:55 PM	Plummer, Thomas	PH 311	17	17	Web-Enhanced
183	Spring 2019	01	11844	ANTH 280 (3, 3)	Language and Social Identity	T, TH	3:10 PM - 4:25 PM	Rodriguez Aponte, J...	PH 114	34	33	Web-Enhanced
184	Spring 2019	01	62926	ANTH 2953 (3, 3)	Ind Std -Anth		-	Pechenkina, Ekateri...		1	1	In-Person
185	Spring 2019	02	62476	ANTH 2953 (3, 3)	Ind Std -Anth		-	Tache, Karine		1	1	In-Person
186	Spring 2019	01	48129	ANTH 302 (3, 3)	Ecology And Culture	T, TH	10:45 AM - 11:59 AM	Moore, James	PH 311	20	18	In-Person
187	Spring 2019	01	11840	ANTH 354 (3, 3)	Time	T, TH	1:40 PM - 2:55 PM	Birth, Kevin	PH 351	15	15	In-Person
188	Spring 2019	01	11837	ANTH 361 (3, 3)	Human Variation	M, W	10:45 AM - 12:00 PM	Madimenos, Felicia	PH 311	18	17	Web-Enhanced
189	Spring 2019	01	56480	ANTH 390 (3, 3)	Senior Honor Thesis		-	Swedell, Larissa		1	1	In-Person
190	Spring 2019	03	62480	ANTH 390 (3, 3)	Senior Honor Thesis		-	Pechenkina, Ekateri...		1	1	In-Person
191	Spring 2019	02	56863	ANTH 390 (3, 3)	Senior Honor Thesis		-	Strassler, Karen		1	1	In-Person
192	Spring 2019	1	57969	ANTH 3953 (3, 3)	Directed Studies		-	Pechenkina, Ekateri...		1	1	In-Person
193	Spring 2019	01	44971	ARAB 101 (4, 4)	Elem Arabic 1	T, TH	10:05 AM - 11:55 AM	Soleimani, Kamal	QH 345C	25	25	In-Person
194	Spring 2019	01	11250	ARAB 102 (4, 4)	Elem Arabic 2	T, TH	10:05 AM - 11:55 AM	Abdelghany, Hala	QH 265C	28	25	Web-Enhanced
195	Spring 2019	02	56473	ARAB 306 (3, 3)	Advanced Arabic II	W	9:10 AM - 12:00 PM	Soleimani, Kamal	QH 26...	7	25	Web-Enhanced
196	Spring 2019	02	11624	ARTH 001 (3, 3)	Introduction To Art	TH	5:00 PM - 7:50 PM	Clark, William	KP 403	52	50	In-Person
197	Spring 2019	01	11623	ARTH 001 (3, 3)	Introduction To Art	T	9:10 AM - 12:05 PM	Zeuschner, Margaret	KP 404	40	40	In-Person
198	Spring 2019	03	11625	ARTH 001 (3, 3)	Introduction To Art	TH	1:40 PM - 4:30 PM	Clark, William	KP 403	50	50	In-Person
199	Spring 2019	01	11627	ARTH 101 (3, 3)	Hist Of Western Art 1	M	1:40 PM - 4:30 PM	Nici, John	KP 403	50	50	In-Person
200	Spring 2019	01	11629	ARTH 102 (3, 3)	Hist Western Art 2	S	1:00 PM - 4:00 PM	Burnham, Mary	KP 403	42	50	In-Person

These are some of the data anomalies and fix them in your ERD design



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	Semester	Sec	Code	Course (hr, crd)	Description	Day	Time	Instructor	Location	Enrolled	Limit	Mode of Instruction
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190	Spring 2019	03	62480	ANTH 390 (3, 3)	Senior Honor Thesis		-	Pechenkina, Ekateri...		1	1	In-Person
191	Spring 2019	02	56863	ANTH 390 (3, 3)	Senior Honor Thesis		-	Strassler, Karen		1	1	In-Person
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200	Spring 2019	01	11629	ARTH 102 (3, 3)	Hist Western Art 2	S	1:00 PM - 4:00 PM	Burnham, Mary	KP 403	42	50	In-Person
201	Spring 2019	02	11630	ARTH 102 (3, 3)	Hist Western Art 2	M	1:40 PM - 4:30 PM	Wallace, Ian	KP 404	41	40	In-Person
202	Spring 2019	03	11631	ARTH 102 (3, 3)	Hist Western Art 2	F	10:00 AM - 12:50 PM	Lee, Chae Eun	KP 403	53	50	In-Person
203	Spring 2019	01	11632	ARTH 113 (3, 3)	Survey Modern Art	W	1:40 PM - 4:30 PM	Powers, Edward	KP 403	48	50	In-Person
204	Spring 2019	01	11635	ARTH 215 (3, 3)	Gothic Art	T	1:40 PM - 4:30 PM	Clark, William	KP 403	40	50	In-Person
205	Spring 2019	01	11637	ARTH 234 (3, 3)	Baroque Art In Italy	M	9:10 AM - 12:05 PM	Nici, John	KP 401	36	50	In-Person
206	Spring 2019	01	11639	ARTH 256 (3, 3)	Contemp Art Practices	TH	1:40 PM - 4:30 PM	Powers, Edward	KP 404	38	40	In-Person
207	Spring 2019	01	55262	ARTH 258 (3, 3)	Hist Of Photography	T	10:00 AM - 12:50 PM	Lebowitz, Anjuli	KP 403	51	50	In-Person
208	Spring 2019	01	18919	ARTH 286 (3, 3)	African Art	F	10:00 AM - 12:50 PM	Waldron, Lawrence	KP 401	23	35	In-Person
209	Spring 2019	01	11642	ARTH 300 (3, 3)	Sr Coll: Art Hist Mthds	TH	6:00 PM - 7:40 PM	Powers, Edward	KP 404	4	10	In-Person
210	Spring 2019	01	11641	ARTH 3203 (3, 3)	Internship: Art Hist		-	.		0	1	In-Person
211	Spring 2019	01	11640	ARTH 330 (6, 3)	Special Problems			.		0	1	In-Person

Create the table names and column names that are self-documenting.

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)
6. Build in constraints that enhance the data quality in your design.

Include in all of the tables in this project the following columns

- ClassTime char(5) Null Default either ('7:45', '9:15' or '10:45')
- LastName varchar(30) NULL DEFAULT ('Your last name') not null
- FirstName varchar(30) NULL DEFAULT ('Your first name') not null
- QmailEmailAddress varchar(30) NULL DEFAULT ('Your Qmail Email Address') not null
- DateAdded datetime2 default sysdatetime() not null
- DateOfLastUpdate datetime2 default sysdatetime() not null
- AuthorizedUserId int null default (Last2DigitOfEmplid)

All surrogate keys will use identity keys for all tables except the Process.WorkflowStep table

Normalize your database model in 3NF

Leverage your knowledge from your CSCI-331 class. Look at http://www.databaseanswers.org as a source of tutorials and design considerations.

Create a production set of tables to transform the Uploadfile table into the normalized tables of your design.

Create a Stored Procedures to load your production model.

1. Create a stored procedure to truncate the tables
2. Create stored procedures to add/drop foreign keys
3. Create stored procedures to load the individual tables as you did in the QueensClassScheduleSpring2017 project
4. Create a single stored procedure that can load all of the production tables on demand using the FileUpload tables.

Document your stored procedures

```
-- ============================================
-- Author:          Your Name
-- Procedure:       Your stored procedure name
-- Create date:     The date
-- Description:     Define the actions of the stored procedure
-- ============================================
```

Create the table Process.WorkflowSteps table with the following columns

- WorkFlowStepKey INT IDENTITY(1,1) NOT NULL, -- pimary key
- WorkFlowStepDescription NVARCHAR(100) NOT NULL,
- WorkFlowStepTableRowCount INT NULL DEFAULT (0),
- LastName varchar(30) NULL DEFAULT ('Your last name'),
- FirstName varchar(30) NULL DEFAULT ('Your first name')
- StartingDateTime DATETIME2(7) NULL DEFAULT (SYSDATETIME()) ,
- EndingDateTime DATETIME2(7) NULL DEFAULT (SYSDATETIME()) ,
- ClassTime CHAR(5) NULL DEFAULT ('07:45' OR '09:15' OR '10:45'),
- QmailEmailAddress varchar(30) NULL DEFAULT ('Your Qmail Email Address') not null

✓

Create a stored procedure Process.usp_TrackWorkFlow to track each of the steps of your entire workflow of your project

This stored procedure will be incorporated within each of the stored procedures that you create to load the start schema. You have to design this stored procedure.

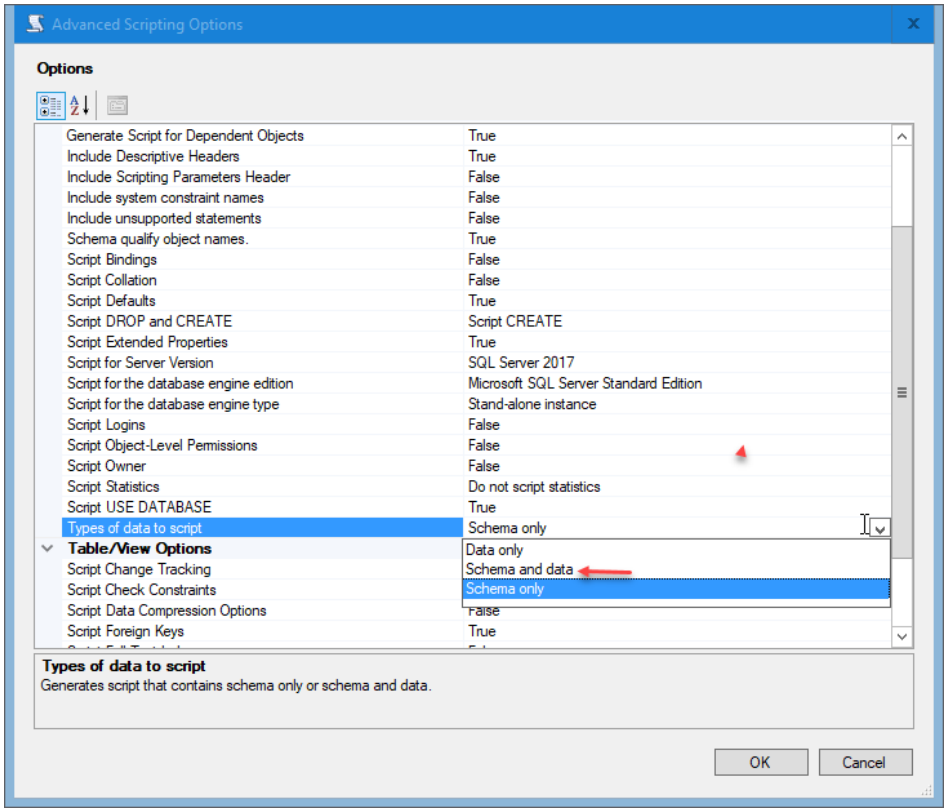
```
-- ================================================
-- Author:          Your Name
-- Procedure:       [Process].[usp_TrackWorkFlow]
-- Create date:     The date
-- Description:     Define the actions of the stored procedure
-- ================================================
ALTER PROCEDURE [Process].[usp_TrackWorkFlow]
    -- Add the parameters for the stored procedure here
    @StartTime DATETIME2,
    @WorkFlowDescription NVARCHAR(100),
    @WorkFlowStepTableRowCount int
```

Create queries with propositions that support your design decisions

1. Show all instructors who are teaching in classes in multiple departments
2. How many instructors are in each department?
3. How may classes that are being taught that semester grouped by course and aggregating the total enrollment, total class limit and the percentage of enrollment.
4. 3 more queries of your choice and their proposition.

Create a voice annotated PowerPoint presentation describing your project lifecycle

1. Document your data cleansing issues
2. Your naming conventions for columns, tables and schema names for separation of your SQL objects in the ERD.
3. Document your index design decisions.
4. Files to be submitted
    a. Screen shots of your ERD that shows the work implemented in your design.
    b. Project management tracking documents
    c. Script the entire database into a .sql file with data in the advanced scripting option.



    d. Create a backup of your final database solution ClassTimeLastNameFirstNameNameBIClass.bak)

e. Add files that pertained to the work in step "Create a voice annotated PowerPoint presentation describing your project lifecycle".

Submit your work in a vhdx file with a link to a cloud file location. Do not try to attach it to an email!