Kennesaw State University
Department of Information Technology
IT6713 Business Intelligence
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Term Project:

Enrollment Analysis

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I. Data Analysis and Cleanse

A. Source Data

The excel file source data provided for this term project, *course schedule data cse.xlsx*, contains ten worksheets of registration data from KSU CCSE department. The data in this source file informs which courses and sections were offered, for how many credit hours, what days the courses were held, whether the course was online, in-class or hybrid, how many weeks the courses lasted, who taught the course, where the class was held, how many students originally registered, how many actually enrolled and what the maximum number of students for that course was for each semester and year contained. The first sheet titled "2009-2012" has columns A through K containing the CRN, course code, course title, credit hours, days, weeks, time of class meeting, instructor, room, current, regular and max headcount, and semester code for the three semesters from 2009 to 2012. The second sheet titled "201208" has columns A through J containing the same fields for the 2012 Fall semester, except the semester code in column K. As a one-person team, this project will use these first two sheets and analyze registration data from years 2009 to 2012.

B. Data Model
Explanation of Key Terms

- CRN: Course Registration Number assigned to course sections, but not unique
- Course Number: 1xxx- 4xxx are for the four undergraduate levels
  5xxx and higher are for graduate levels
  3903, 4903 are reserved for undergraduate Special Topics courses, so multiple variations of course titles corresponding to this course number*
  6903 is reserved for graduate Special Topics courses, so multiple variations of course titles corresponding to this course number*
- Course Section: 0xx is for in-class sections of a course
  8xx is for hybrid sections
  9xx is for online sections
  051- 073 are for labs (labs for courses have 0 credit hours)
- Subject Code: Courses have prefixes (IT, CS, CSE, CGDD, SWE) for the subject
  Note: CGDD does not offer any graduate level courses
- Cur/Reg/Max: Cur is the Actual Enrollment (headcount) after drop
  Reg is the Original Enrollment (headcount) before drop
  Max is the Maximum available seats set for the course

A course offered as Special Topic may be offered in another semester as a regular course under a regular course number

Business Focus of Report/Analysis

The goal of this report and analysis is to examine the course offering and registration pertaining to the CCSE college and the departments (IT and CSWE). The main areas of interest

are class registration analysis, degree program analysis, and faculty workload analysis.

- For enrollment analysis, total registration numbers will be viewed from the perspectives (dimensions) created, such as semester, year, class level (undergraduate/graduate), subject, and department. The analysis will allow registration history and trends comparison by semester/year, department, subject, and modality (online/in-class/hybrid). Metrics on registration, such as average class size, withdraw rate and total enrollment can be viewed by perspectives mentioned. Class registration numbers can inform school management on decisions such as whether or not to offer more online versus in-class courses, whether or not departments relying more on adjuncts experienced less growth in enrollment, and more.
- For degree program analysis, registration history and metrics mentioned above can be compared between departments and examine growth rates and trends by dimensions like subject, modality, etcetera. This can inform decisions such as which department is experiencing more growth/demand and needs to receive more funding.
- For faculty workload analysis, the report can show individual faculty member's total numbers on courses, sections, students taught, or withdraw rate by semester and course, and also as a whole by department (IT, CSWE). Faculty analysis can allow comparisons per faculty or by department, or by rank and status, and can inform scheduling decisions and accreditation compliance matters regarding adjunct taught course percentages.

C. Start Schema
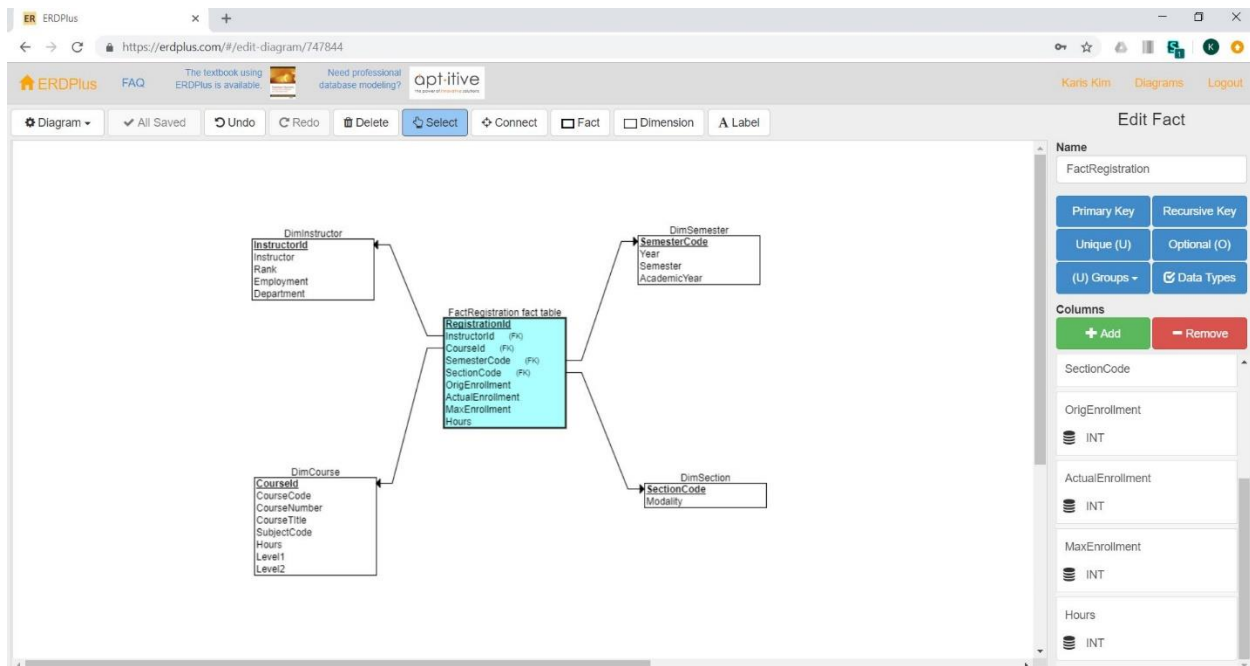
D. Data Cleanse
Registration Sheet:

The Registration sheet will be a cleansed, combined and renamed version of the 2009-

2012 sheet and 201208 sheet from *course schedule data cse.xlsx*. Registration sheet contains the data that will be loaded into the fact table. The Course column will need to be split to pull the course code to map to the Course dimension. Also, the Cur/Reg/Max column will need to be split into three columns using Derived Column in SSDT, so that Cur will be mapped to Actual Enrollment, Reg will be mapped to Original Enrollment, and Max will be mapped to Max Enrollment in the fact table. After the column is split into three based on the slash / as a marker, Data Conversion in SSDT will be used to convert all data types to the data type designated in the destination data mart fact table.

The columns in 2009-2012 sheet and 201208 sheet will be renamed and reordered as listed below for Registration sheet.

> Column A: Semester Code
> Column B: Course
> Column C: Course Number (add)
> Column D: Section Code (add)
> Column E: Course Title
> Column F: Hours
> Column G: Days
> Column H: Weeks
> Column I: Time
> Column J: Instructor
> Column K: Room
> Column L: Cur/Reg/Max

- CRN (Course Registration Number) column will be removed, because CRN is not unique and cannot be used as a primary key nor provide any useful information for registration analysis.
- Course Titles in the 201208 sheet contain miscellaneous notes, so this column will be cleansed to only contain course titles.
- Course Titles in consolidated 2009-2012 and 201208 sheets revealed inconsistent spelling of course titles for the same course code. In some cases, Graduate and Undergraduate offerings of the same course was distinguished by a different spelling of the title, but the spelling conventions were consistent in those cases, so they were untouched. However, the following inconsistencies for course titles corresponding to the same course code were corrected.

IT 4903 / 850	Database Security & Auditing	3
IT 4903 / 850	Database Security ~~and~~ & Auditing	3
IT 6863 / 850	Database Security & Auditing	3
IT 6863 / 850	Database Security & Auditing	3

IT 4903 / 001	Hardware-based Intrusion Detec	3
IT 4903 / 852	Hardware-based Intrusion Detec	3
IT 6903 / 001	Hardware-based Intrusion Detec	3

IT 6903 / 851	Hardware-based Detec	3

IT 4903 / 850	HrdwreBasedIntrusioDetection&Preventio	3
IT 4903 / 900	HrdwreBasedInstrusioDet&Preven	3

Note: Even though IT 4903 course title is spelled in two different ways, this will not be cleansed because course naming convention may have been changed intentionally.

IT 4823 / 001	Info Security Administration	3
IT 4823 / 001	Info Security Admin istration	3
IT 4823 / 001	Info Security Administration	3

CS 3224 / 052	Computer Org & Architecture	0
CS 3224 / 052	Computer Org & Architecture	0
CS 3224 / 052	Computer Org & Architecture	0

IT5202 Into to Computer Platforms typo corrected → Intro to Computer Platforms

- Course codes in 201208 sheet Course column has subject code and course number *without* a space between, while 2009-2012 sheet Course column has subject code and course number *with* a space inserted between. So, using "Flash Fill" function in excel Data tab, all course codes in 2009-2012 sheet will be reformatted without a space between subject code and course number, to be consistent.
- Course column in 2009-2012 and 201208 sheets contains a concatenated subject code, course number and section number and section type, so additional separate columns for Course Number (to link to Course sheet) and Section Code (to link to Section sheet) will be added to Registration sheet. Using "Text to Columns" function in excel Data tab with
- Room column in 2009-2012 and 201208 sheets containing empty or partial data were left as is and will be loaded as NULL, since data model does not include any analysis involving Room.

E. Data Created for Dimension Tables

Dimension	Attribute (types)	Example value	Notes
Instructor	Instructor (last name and first initial)	Zheng G	Same as Instructor column in Registration sheet
	Employment (full time, adjunct)	Professor	Either full time or adjunct
	Rank (professor, lecturer)	Full time	Either professor or lecturer

	Department (IT, CSWE)	IT	Either IT or CSWE
Semester	Semester Code	200908	Same as Semester Code column in Registration sheet
	Year	2009	
	Semester (Spring, Summer, Fall)	Fall	
	Academic Year	2009-2010	
Course	Course Code	IT6713	Same as Course Code column in Registration sheet
	Subject Code (IT, CS, CSE, CGDD, SWE)	IT	One of these five
	Course Number	6713 or 1301C	4 or 5 digit varchar
	Course Title	Business Intelligence	
	Hours (0, 1.5, 2, 3, 4)	3	
	Level1 (undergraduate, graduate)	Graduate	
	Level2 (freshman, sophomore, junior, senior, transition, graduate)	Graduate	
Section	Section Code	001	Same as Section Code column in Registration sheet
	Modality (in-class, online, hybrid)	ONLINE	In Days column and/or Time column in Registration sheet

Instructor Sheet:

The Instructor sheet contains instructor's name (last name and first initial) which is identical in format to the instructor's name in the Registration sheet, so no splitting column will be needed for this attribute in SSDT. Employment, Rank, and Department columns are not in the Registration table, so mapping of Instructor sheet as a dimension table to the Registration sheet as a fact table should be linked based on the name of the instructor. In the data mart table, a system generated InstructorId will be added as a primary key to assign a unique PK number to each instructor.

In Instructor sheet, instructor names and their corresponding rank, employment status and department information were referenced from the source-data excel file used in Milestones. However, some names contained in the term project data source file were not in the milestone data source file, so the following was created/added to the term project source data file.

Instructor	Rank	Employment	Department
Chang Y	Adjunct	Lecturer	CSWE

Conn S	Adjunct	Lecturer	IT
Hogge W	Adjunct	Lecturer	CSWE
Jagirdar S	Adjunct	Lecturer	CSWE
Lartigue J	Adjunct	Lecturer	CSWE
McNamara B	Adjunct	Lecturer	IT
O'Gorman K	Adjunct	Lecturer	CSWE
Teat C	Adjunct	Lecturer	CSWE
White C	Adjunct	Lecturer	IT
Xu H	Adjunct	Lecturer	CSWE

One typo for the department of instructor name Reichgelt J was corrected from CSE to CSWE in CCSE-Term-Proj database using sql code:

```
UPDATE [dbo].[DimInstructor]
SET Department = 'CSWE'
WHERE Department = 'CSE';
```

Semester Sheet:

The Semester sheet contains a Semester Code which is the same format as the Semester Code in the Registration sheet. Year, Semester, and Academic Year columns are not in the Registration sheet, so in mapping Semester sheet as a dimension table to the Registration sheet as a fact table should be linked based on this attribute, and Semester Code will be a foreign key in the FactRegistration table.

Section Sheet:

The Section sheet contains the Section Code, which is the same as the last 3+ digits after the slash in the Course column of the Registration sheet. However, since there is a separate column in the Registration sheet for Section Code, which is identical in format to the one in the Section sheet, those two corresponding columns will be used to map and link Semester sheet as a dimension table to the Registration sheet as a fact table. Section sheet will also have a column Modality, which identifies whether a section is hybrid, online, regular, regular-honor, or lab.

Course Sheet:

The Course sheet contains the Course Code column, which corresponds to the first part of the string before a slash / in the Course column of the 2009-2012 and 201208 sheets. Since the Course column contains a concatenation of Course Code(subject code and course number) and the section number followed by a slash, the Course column will need to be split to yield just the Course Code, so that this Course sheet as a dimension table can be linked to the Registration sheet as a fact table based on the column Course Code. In addition to Course Code, Course Number, Course Title and Subject Code, the course sheet will also have Hours column, and Level 1 (for Undergrad and Grad) and Level 2 (Freshman, Sophomore, Junior, Senior, Transition, Graduate) columns added.

Note: After several ETL trials resulting in errors, the Course sheet and the Registration sheet was retroactively saved as separate csv files for ETL. The course column split was also performed outside of SSDT because derived columns error could not be resolved.

II. Database: Screenshots and Description of Database Diagram

A. Create SQL Server Data Mart

Using SQL Server Management Studio, create a data mart (database) with dimension tables and fact table. This creates a destination for the transformed data to be loaded after performing ETL in Visual Studio SSDT. The dimension table primary keys connect to the fact table as a foreign key in the fact table. In data analysis, course codes were not found to be unique and so, system generated primary keys were created for the Course dimension table in addition to the Instructor table to link them to the fact table to avoid confusion and to be on the safe side. Also, system generated primary keys were retroactively created for the Section and Semester dimension tables after initial executions returned an error for duplicate values.
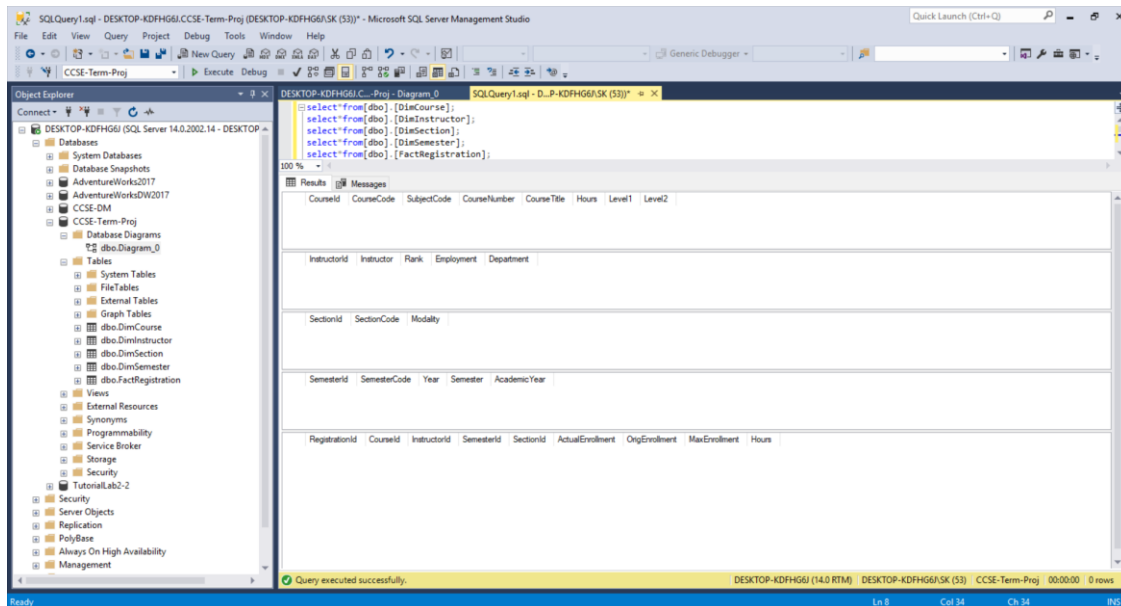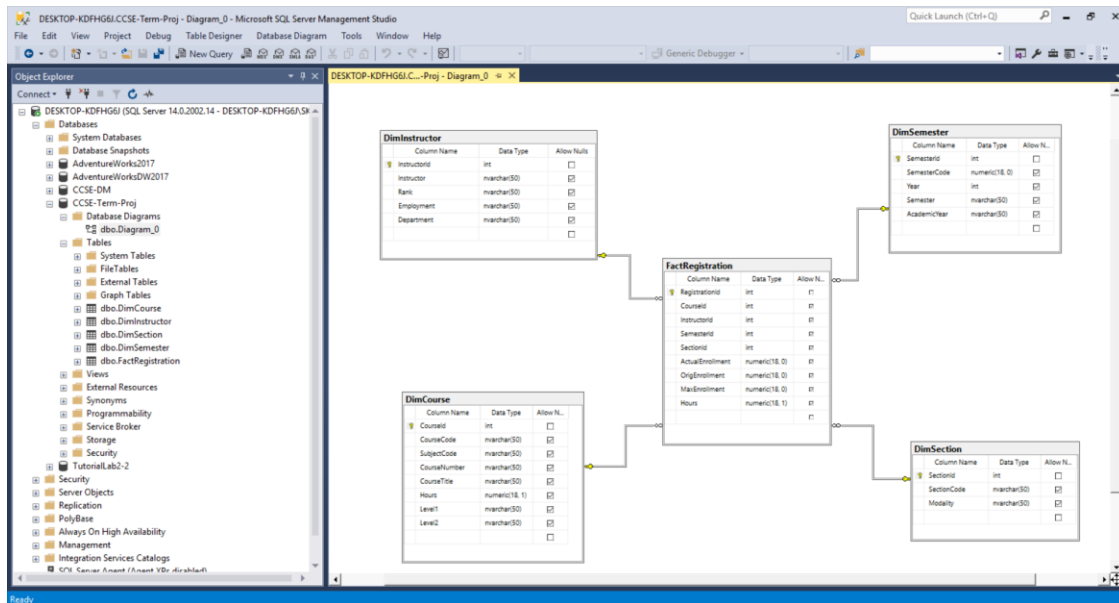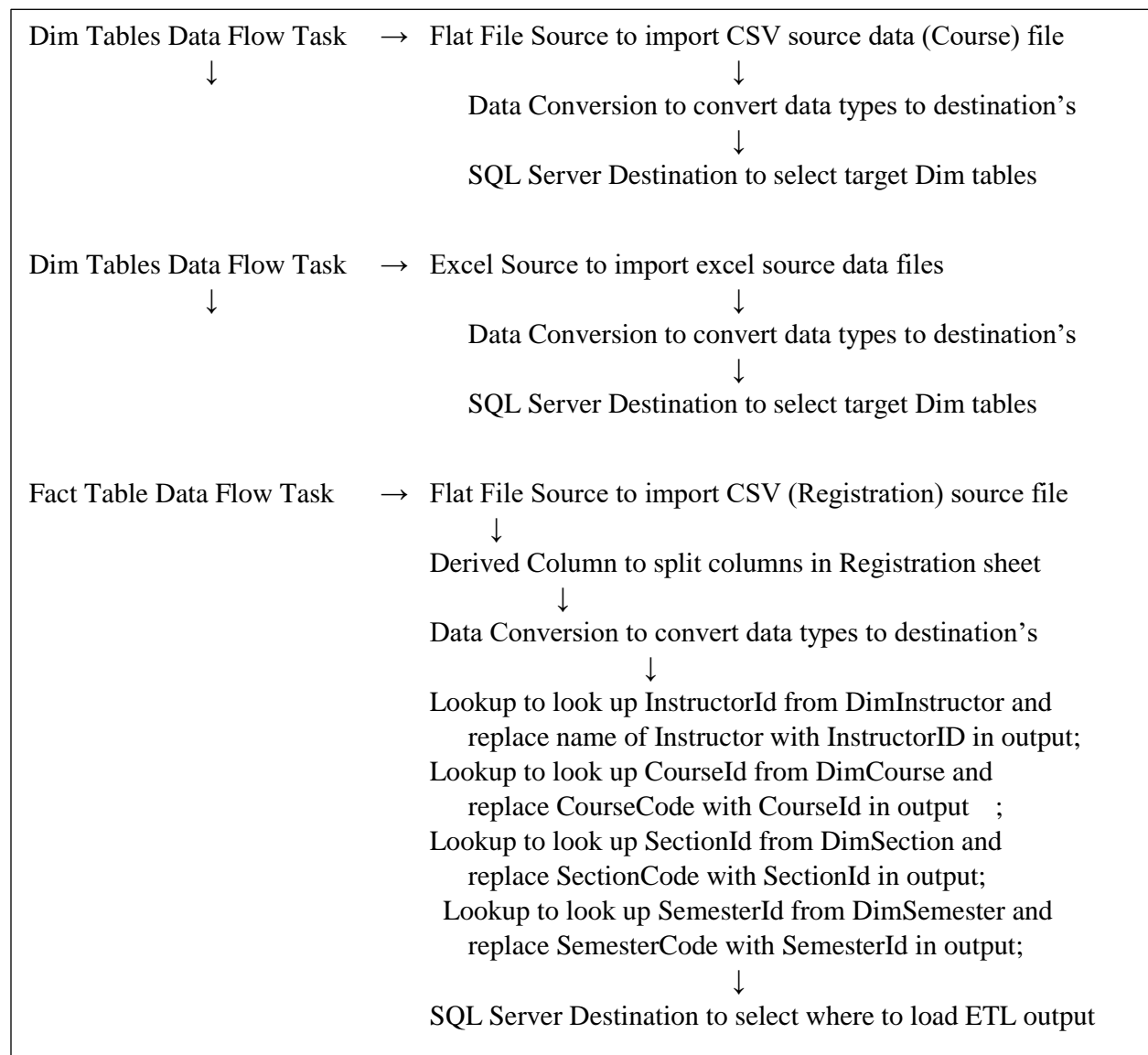
III. ETL Design Strategy

A. Loading Order

1. Dimensional Tables: DimCourse, DimInstructor, DimSemester, DimSection
2. Fact Table: FactRegistration

Dimensional tables should be loaded before the Fact table because the Primary Keys in the Dimensional tables will be Foreign Keys in the Fact table, and so there are referential integrity constraints. In SSDT Control Flow, the data flow task will also be created to follow this order.

B. Control Flow and Data Flow

Dimension tables will load first from data source, then fact table will load.

Dim Tables Data Flow Task   → Flat File Source to import CSV source data (Course) file
                ↓   ↓
                              Data Conversion to convert data types to destination's
                                                     ↓
                              SQL Server Destination to select target Dim tables

Dim Tables Data Flow Task   → Excel Source to import excel source data files
                ↓   ↓
                              Data Conversion to convert data types to destination's
                                                     ↓
                              SQL Server Destination to select target Dim tables

Fact Table Data Flow Task   → Flat File Source to import CSV (Registration) source file
                                                ↓
                              Derived Column to split columns in Registration sheet
                                                    ↓
                              Data Conversion to convert data types to destination's
                                                         ↓
                              Lookup to look up InstructorId from DimInstructor and
                                   replace name of Instructor with InstructorID in output;
                              Lookup to look up CourseId from DimCourse and
                                   replace CourseCode with CourseId in output   ;
                              Lookup to look up SectionId from DimSection and
                                   replace SectionCode with SectionId in output;
                               Lookup to look up SemesterId from DimSemester and
                                   replace SemesterCode with SemesterId in output;
                                                    ↓
                              SQL Server Destination to select where to load ETL output

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For Dimension Tables Data Flow Task, there are no derived tables. Simple mapping should load

source-data (*course schedule data cse.xlsx)* to SQL Server Destination tables before moving on to Fact Table Data Flow Task.

C. Transformation Logic
1. Column Mapping Breakdown:
   Input columns on the left will use post-data conversion columns to map to destination tables on the right, with the exception of system generated IDs.

course schedule data cse_cleansed_course.csv		*DimCourse* table
Ignore (system generated in table)	→	CourseId
Course Code	→	CourseCode
Subject Code	→	SubjectCode
Course Number	→	CourseNumber
Course Title	→	CourseTitle
Hours	→	Hours
Level1	→	Level1
Level2	→	Level2

course schedule data cse.xls → *Instructor* sheet		*DimInstructor* table
Ignore (system generated in table)	→	InstructorId
Instructor	→	Instructor
Employment	→	Employment
Rank	→	Rank
Department	→	Department

course schedule data cse.xls → *Semester* sheet		*DimSemester* table
Ignore (system generated in table)	→	SemesterId
Semester Code	→	SemesterCode
Year	→	Year
Semester	→	Semester
Academic Year	→	AcademicYear

course schedule data cse.xls → *Section* sheet		*DimSection* table
Ignore (system generated in table)	→	SectionId
Section Code	→	SectionCode
Modality	→	Modality

course schedule data cse_cleansed_registration.csv		*FactRegistration* table
Ignore (system generated in table)	→	RegistrationId
Course column Use Lookup to insert CourseId	→	CourseId
Instructor column Use Lookup to insert InstructorId	→	InstructorId

Section Code Use Lookup to insert SectionId	→	SectionId
Semester Code Use Lookup to insert SemesterId	→	SemesterId
Split Cur_Reg_Max, then Cur	→	Actual Enrollment
Split Cur_Reg_Max, then Reg	→	Original Enrollment
Split Cur_Reg_Max, then Max	→	Max Enrollment
Hours	→	Hours

2. Derived Column Expressions

To split column Cur_Reg_Max into three columns:

TOKEN([Cur_Reg_Max], "/ /" , 1)

In column Cur_Reg_Max, two slashes separate the data into three tokens, so take the first token of the result- which is Cur- and place it in a new Derived Column named actualEnrollment.

TOKEN([Cur_Reg_Max], "/ /" , 2)

In column Cur_Reg_Max, two slashes separate the data into three tokens, so take the second token of the result- which is Reg- and place it in a new Derived Column named originalEnrollment.

TOKEN([Cur_Reg_Max], "/ /" , 3)

In column Cur_Reg_Max, two slashes separate the data into three tokens, so take the third token of the result- which is Max- and place it in a new Derived Column named MaxEnrollment.

Derived Column names have been intentionally named using camelCase starting with lower case, so as to distinguish from destination column names in the FactRegistration table.

3. Data Conversion

Data Conversion is intentionally positioned after Derived Columns, because the Cur_Reg_Max column in the source data Registration sheet is of string data type, which will be split into three columns, but at destination fact table, the data types of the three new columns, ActualEnrollment, OriginalEnrollment, and MaxEnrollment are integer. So, once all columns have been split and extracted into what we need, all of the columns will run through Data Conversion and convert data types to conform to the target load destination fact table. All other columns for FactRegistration table will be varchar/string, except these three that are integer.

4. Lookup

Since the FactRegistration table is designed to have InstructorId replace the names of instructors, and the InstructorId is a system generated primary key in the DimInstructor dimension table, a Lookup will be used to look up column InstructorId from [dbo].[DimInstructor] and output lookup matches as InstructorId based on the mapping of Instructor column in the Registration sheet of the source file to the Name column in [dbo].[DimInstructor] table. The same applies to CourseId from DimCourse, SectionId from DimSection, and SemesterId from DimSemester in SQL Server Destination.

SQL Destination Editor mapping should map input columns from the data conversion (Copy of [source file column name]) to the destination columns rather than using the column names directly from the source file, so that all of the converted data types and derived columns will be loaded into the destination data mart.

IV. ETL: Screenshots and Description of Steps

1. Successful package execution
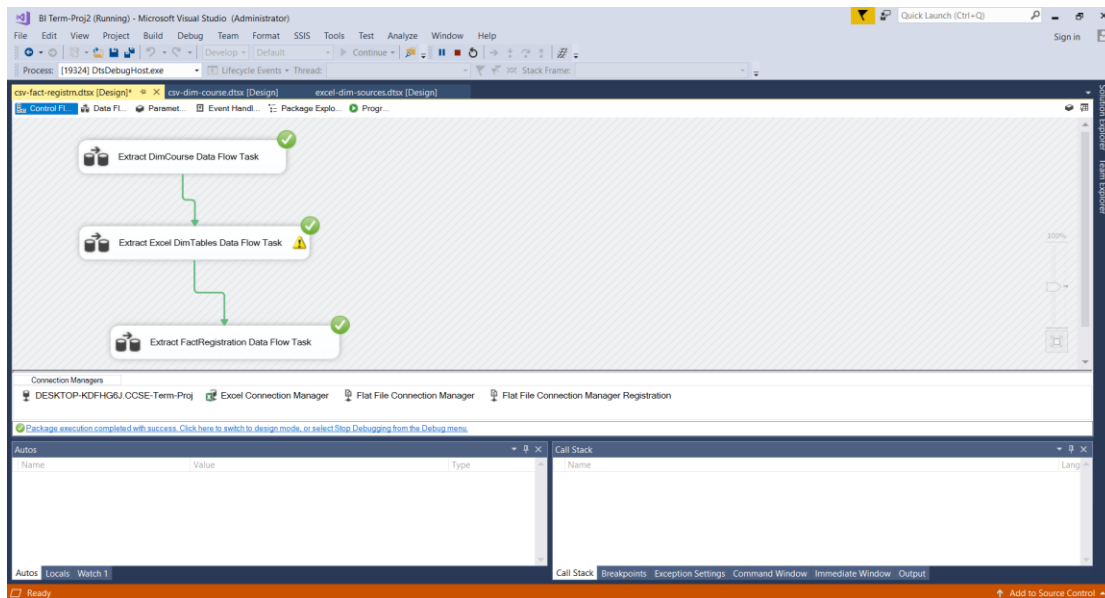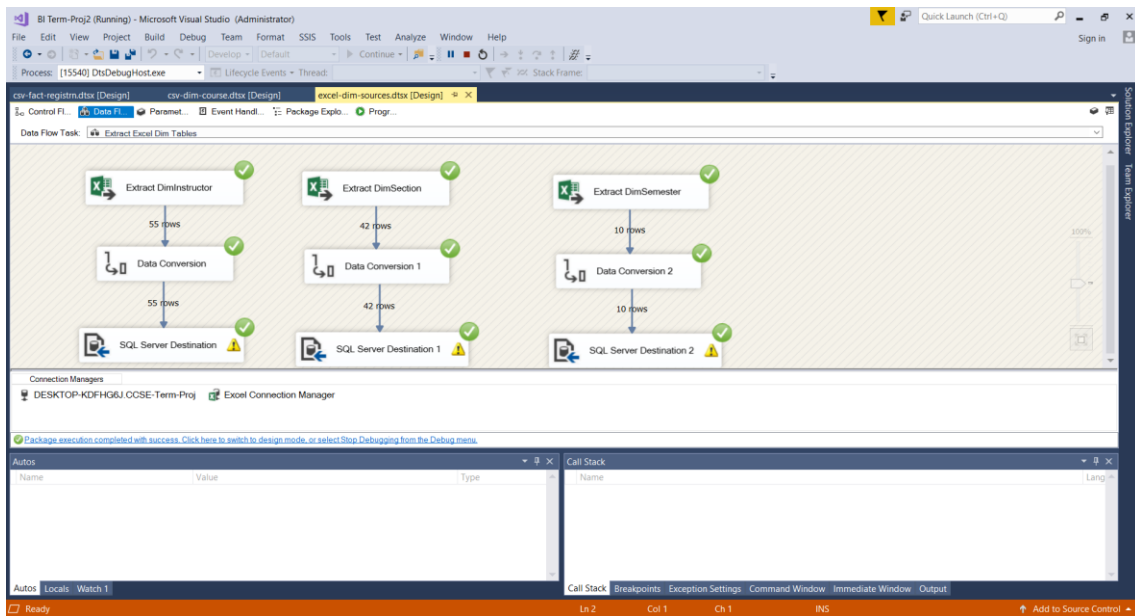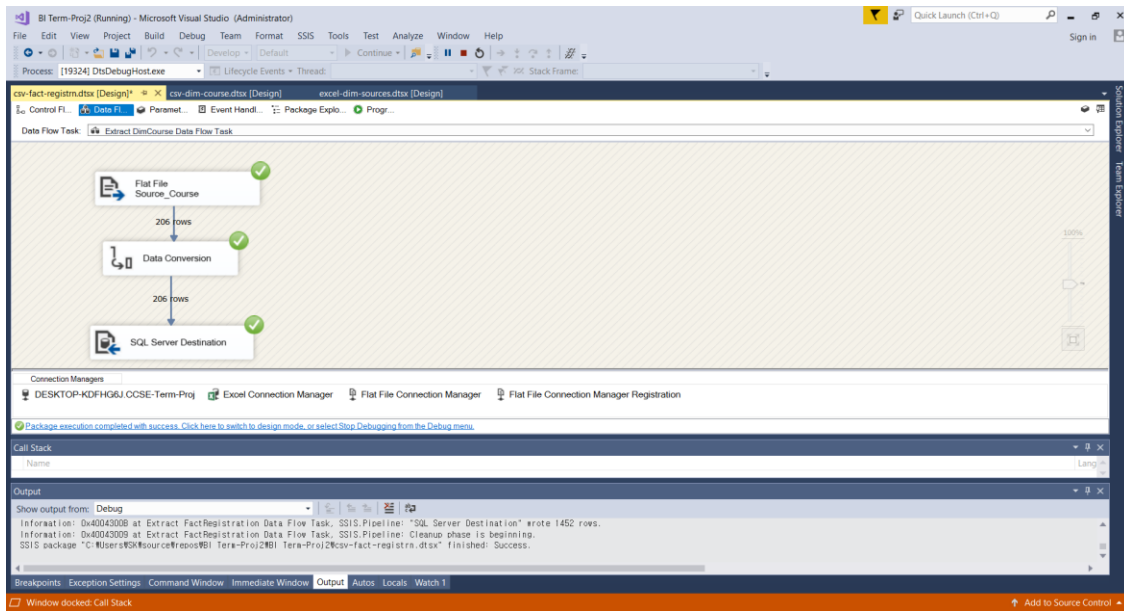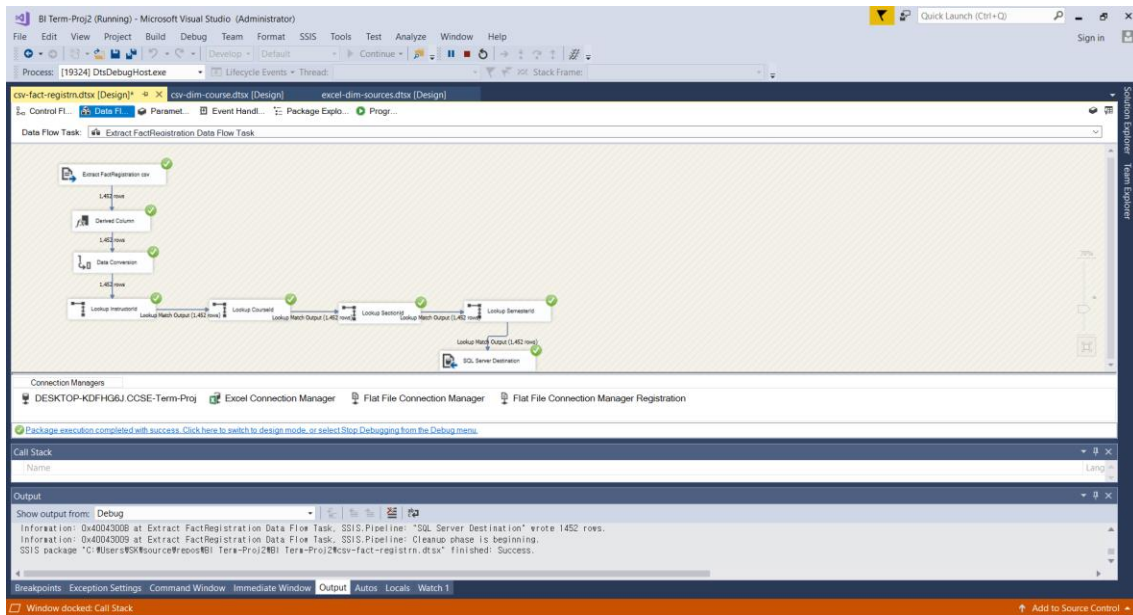
2. In SSMS, query tables to check that all rows loaded successfully
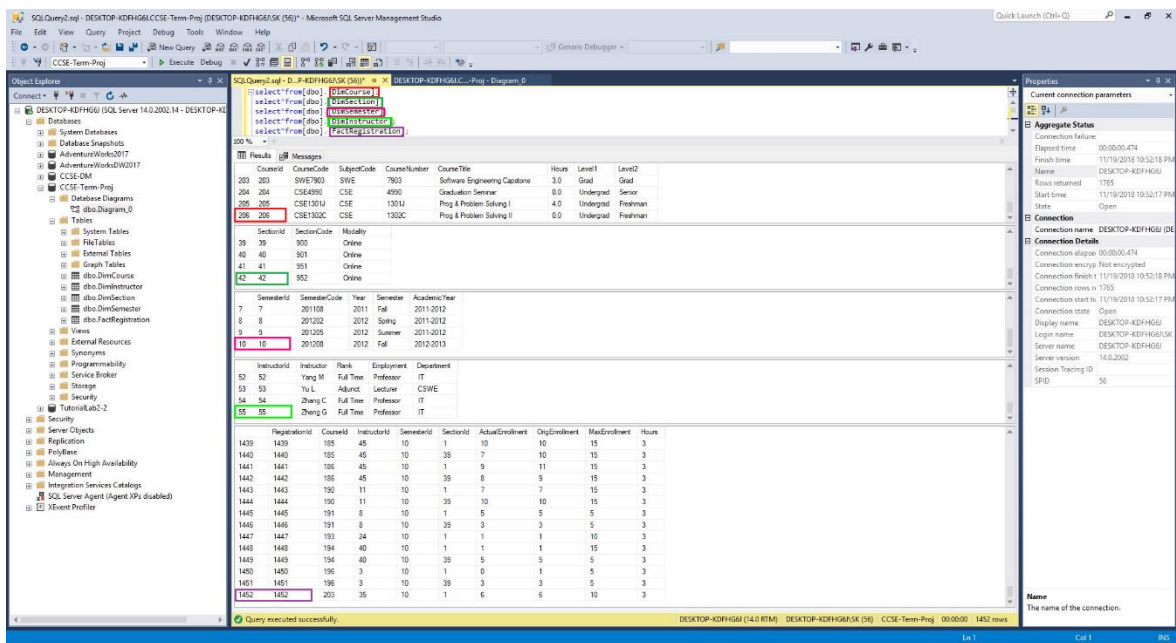
NOTE: Results screen shows that all CCSE-DM tables have equal number of imported rows as the number of rows in corresponding sheets of the source-data excel file.

3. Special note on system generated ID numbers

   System generated ID did not reset with 1 every time tables were deleted and ETL was executed again (in efforts to complete this lab). In order to reset ID auto count to 1, the entire CCSE-DM with all its tables and referential integrity must be dropped and recreated, before rerunning the ETL package. So, the referential integrity relationships were dropped in Database Diagrams and TRUNCATE TABLE [dbo].[TableName] was used to delete and reset the count before each time ETL was executed again, and after the final successful execution, the referential integrity relationships were reconstructed in Database Diagrams.

V. SSAS Cube: Screenshots and Description

Note: Database creation and ETL (Part II and III) was completed on my personal computer, and the backup file of the database was copied into VMware for the following parts.
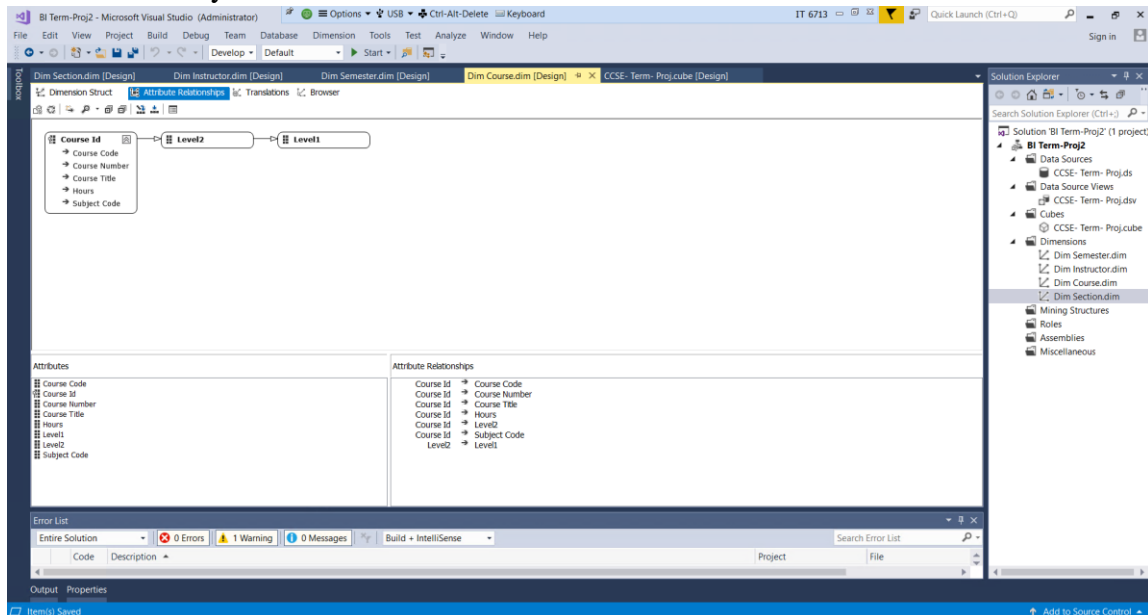
1. Cube Diagram
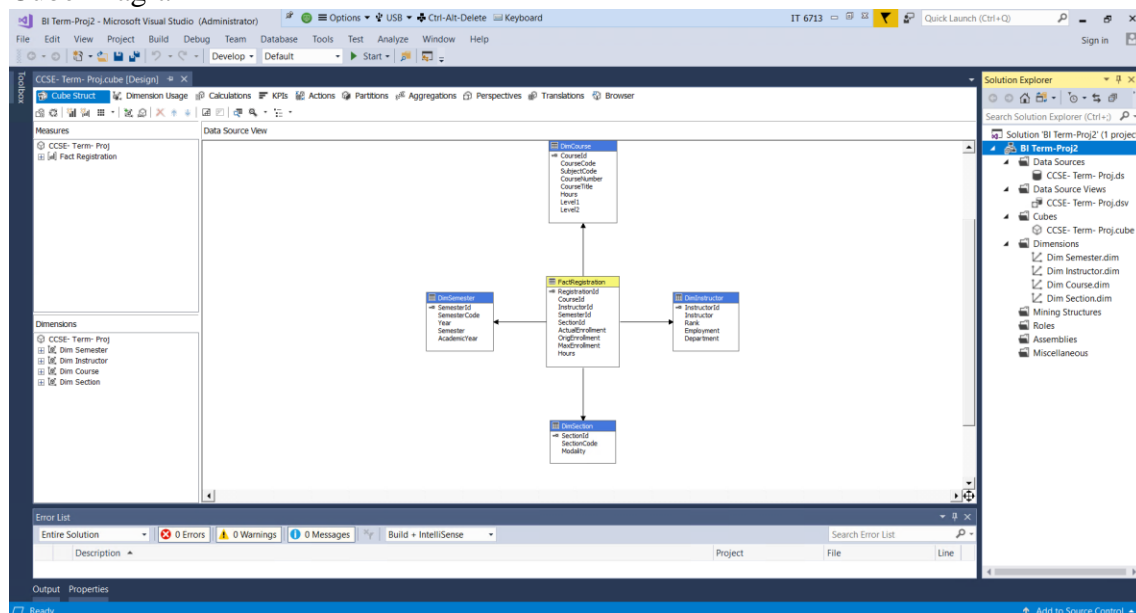
2. Cube Deployment Success
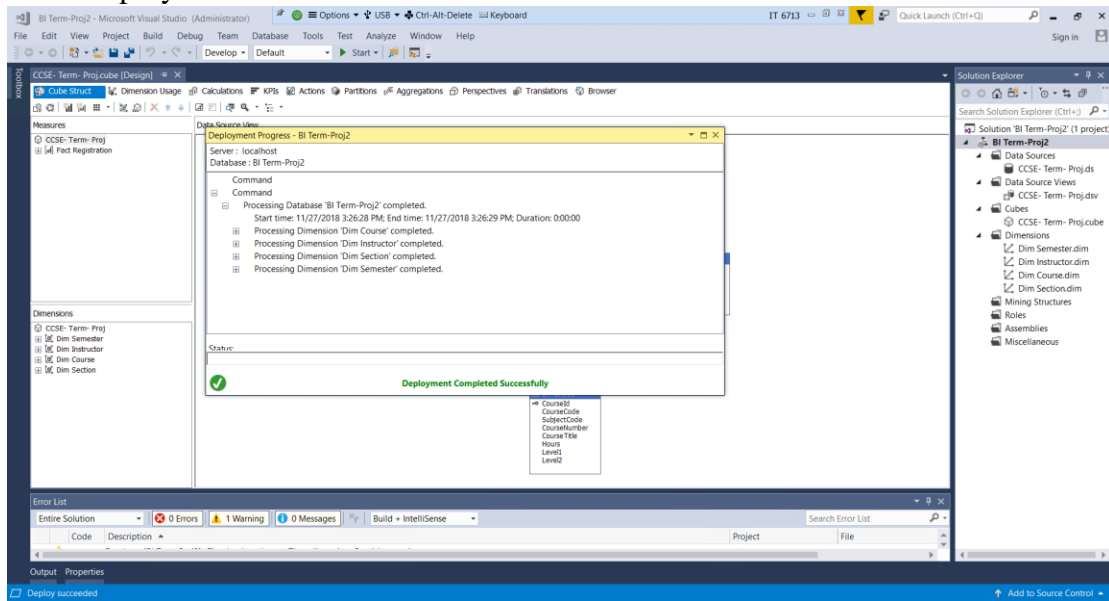
3. Calculated Measure for Average Class Size
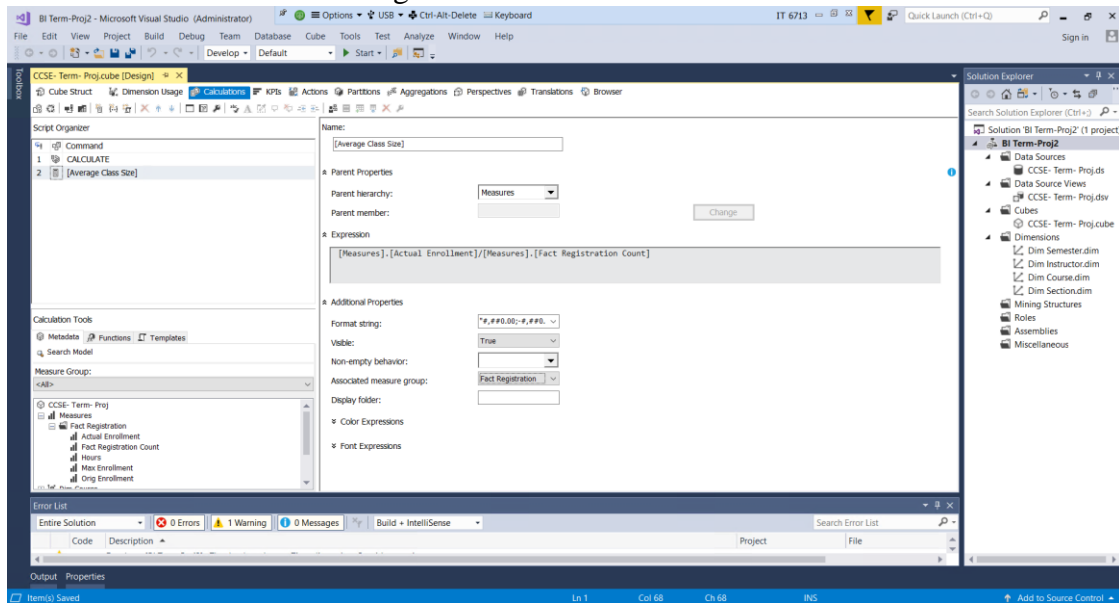
4. Calculated Measure for Withdraw Rate
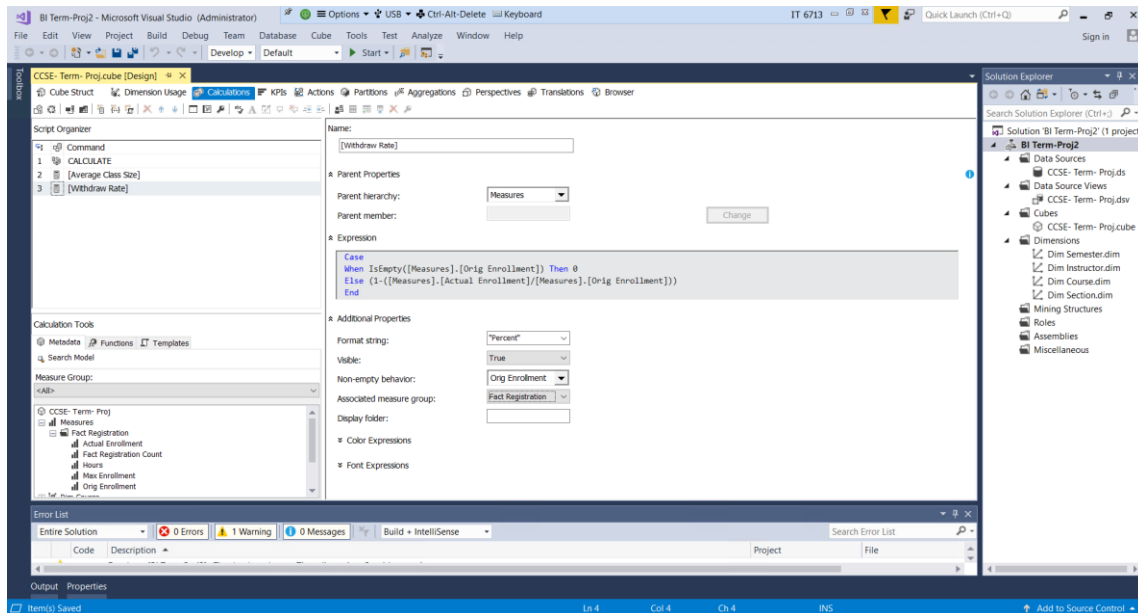
5. Create Hierarchy

Then deploy again (screenshot omitted).

6. SSMS SSAS Cube Browse: Shows the calculated measures and Fact Registration Count total equals the total rows in CCSE-Term-Proj database (1452 rows)

VI. Data Analysis and Dashboard: Screenshots and Description of Analysis and Dashboards

A. Enrollment Analysis

- Total registration numbers by academic year, semester, class level (undergraduate/graduate), department (IT/CSWE), and subject (IT, CGDD, CS, CSE, SWE).
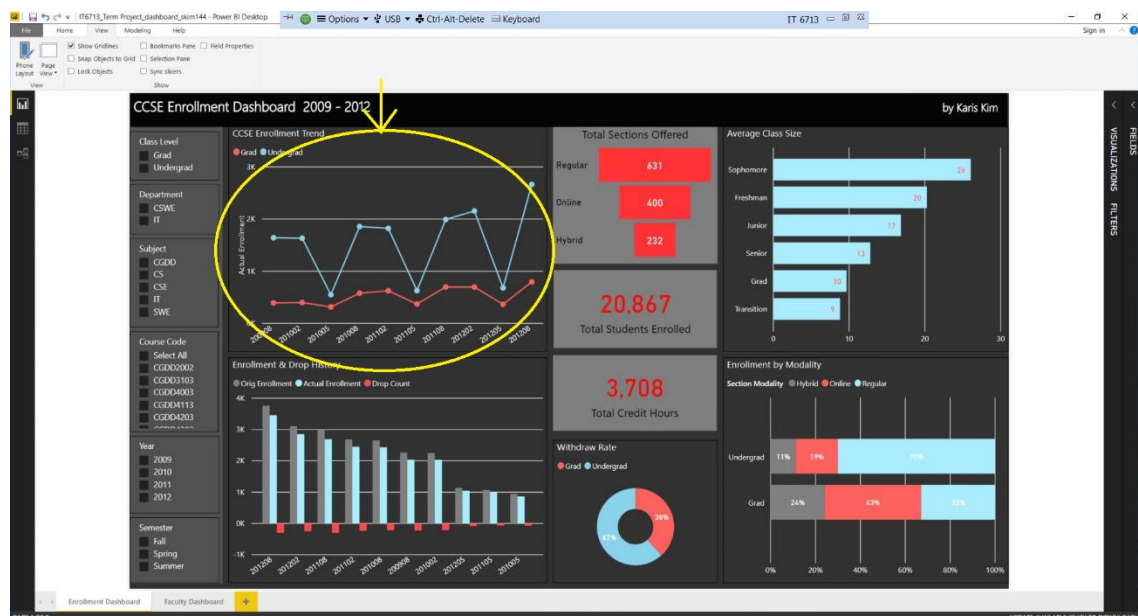
Above screenshot shows aggregate totals from 2009 Fall to 2012 Fall. During this time frame, the most recent semester (2012 Fall) had the highest total CCSE enrollment, serving 20,867 students (non-unique headcount) with 631 regular sections, 400 online

sections and 232 hybrid sections. Undergraduate CCSE enrollment shows a sharp decrease during summer terms, while Graduate enrollment shows a more steady increase.

- Enrollment and drop history/trends comparison by semester/year, department, subject, and modality (online/regular/hybrid).

Above screenshot highlights enrollment and drop head counts for each semester from 2009 Fall to 2012 Fall. The highest total CCSE enrollments occurred in Fall and Spring semesters, with the latest semester showing the highest rate. During this time frame, the data shows that for Undergraduate CCSE courses, a majority of the sections were regular or in-class, while for Graduate CCSE courses, a majority were online sections. This may contribute to the explanation for why graduate enrollment did not see a sharp decline during summer semesters, since online courses do not require campus presence.

- Average class size, withdraw rate by academic year, semester, class levels, major, and modality.

Above screenshot highlights the overall CCSE average class size and withdraw rate from 2009 Fall to 2012 Fall. The largest average class size for CCSE classes were for sophomores at 26, and the smallest average class size was for Graduate Transition classes at 9. When the Average Class Size chart is drilled down to class level (screenshot not shown), data shows that Graduate classes are smaller on average than Undergraduate classes, even though a greater portion of the Graduate classes are online than regular. One would assume that online sections would yield higher average class sizes than regular/in-class sections, but the data points to the contrary. Withdraw rate for CCSE during this time frame shows that of all the drops, 62% are from Undergraduate.

- Degree program comparison of registration history and metrics and examine growth and trends by dimensions like subject, modality, etcetera.

The following two screenshots will compare CSWE department with IT department.
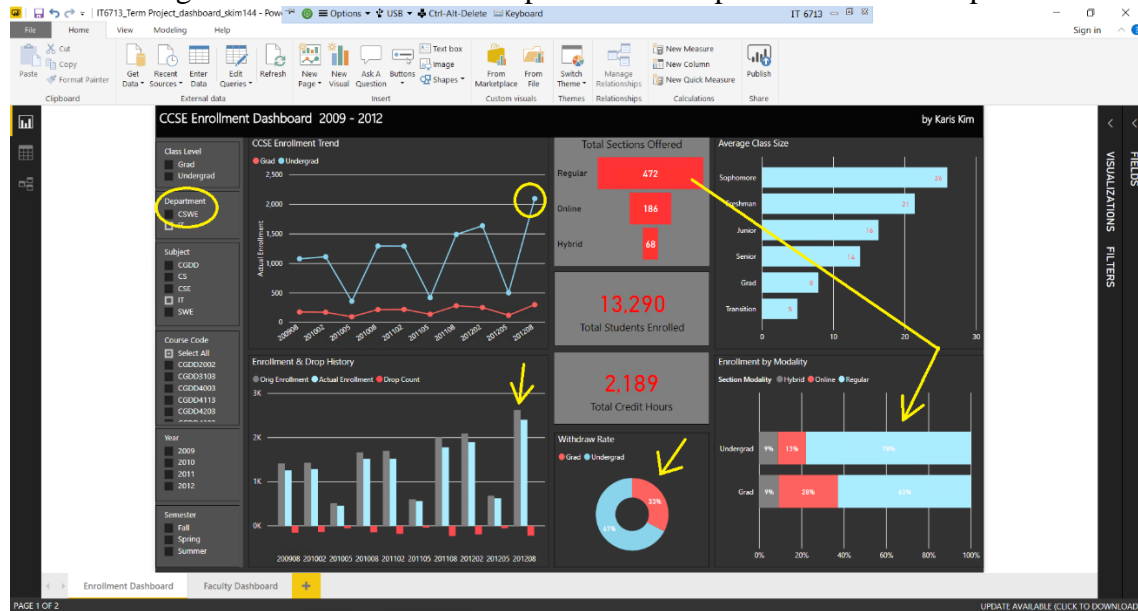
The above screenshot shows CSWE department's enrollment related data from 2009 Fall to 2012 Fall. CSWE served a total of 13,290 students (non-unique head count) with a total of 2,189 credit hours during that time frame. CSWE had the highest enrollment in the latest semester, 2012 Fall, particularly for Undergraduate level. Interestingly, of the total CSWE sections offered during this time frame, the vast majority of sections were regular/in-class for both Undergraduate and Graduate levels. The withdraw rate for CSWE during this time frame showed that of all the withdraws, the Undergraduate level consisted of 67%.
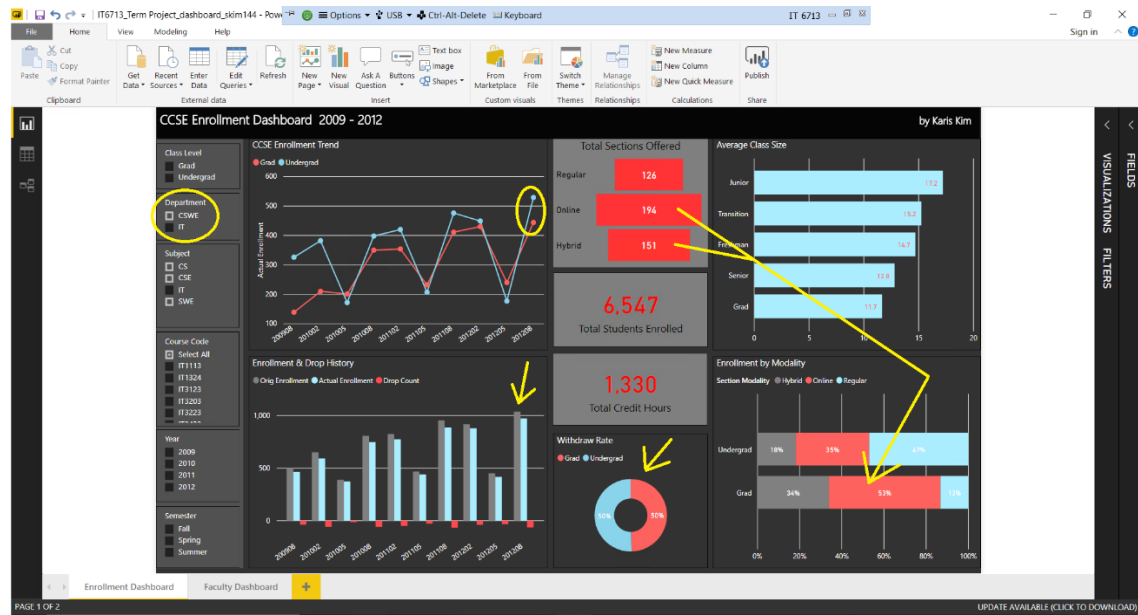
The above screenshot shows the IT department's enrollment related data from 2009 Fall to 2012 Fall. Like the CSWE department, IT department also had the highest enrollment in the latest semester of 2012 Fall; however, the IT department showed an enrollment increase for both Undergraduate and Graduate levels, while CSWE was for Undergraduate. Interestingly, unlike CSWE, the majority of the IT department sections offered were online, particularly for the Graduate level, which only showed 13% of all sections during this time frame were regular/in-class. For IT, the withdraw rate is split evenly half between Graduate and Undergraduate. Total students served in IT department were roughly half of those in CSWE, but this is significant because there are 3 subject majors in CSWE while only 1 in IT.

B. Faculty Workload Analysis
- Individual faculty member's total numbers on courses, sections, students taught, withdraw rate by semester and course.
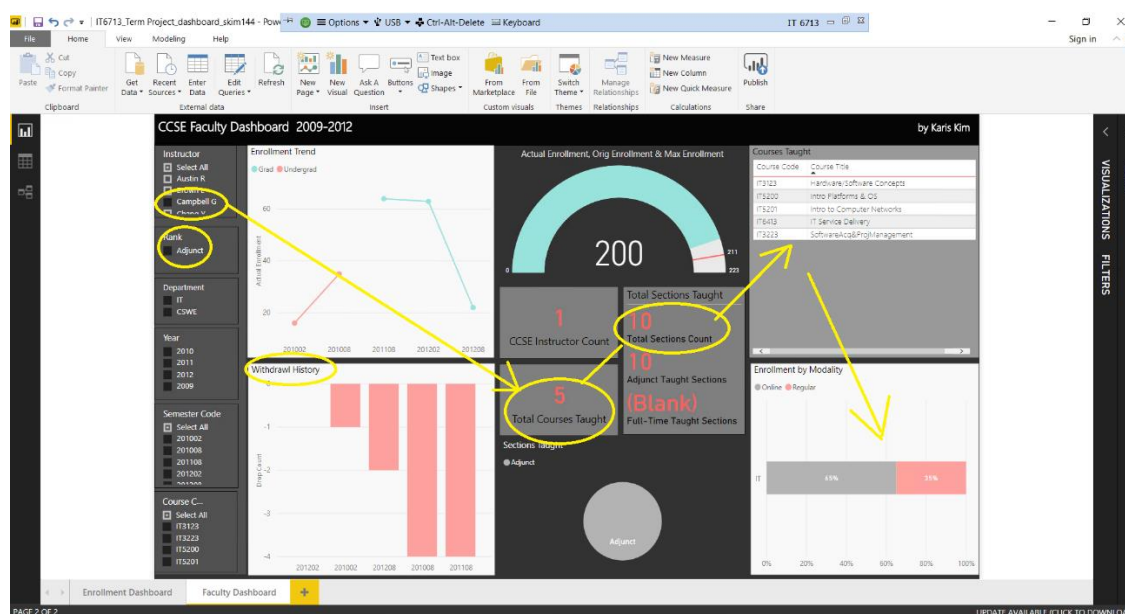
Above screenshot shows one adjunct instructor, Professor G. Campbell. Professor Campbell taught a total of 5 courses and 10 sections in both the Graduate and Undergraduate levels over 4 semesters (2010 Spring, 2010 Fall, 2011 Fall and 2012 Fall). During this time frame, a total of 200 students (non-unique head count) were taught by Professor Campbell. The titles of the 5 courses are listed in the Courses Taught table on the top right section of the dashboard, where we can also see that he taught IT courses, and of those sections, 65% were online sections. Of the 4 semesters, 2010 and 2011 had the biggest withdraw counts. By selecting only those semesters in the Semester Code slicer on the left (no screenshot), we can see that the title of the courses that had the most withdraws (4 students each) were Hardware/Software Concepts, Intro Platforms & OS, and Intro to Computer Networks.
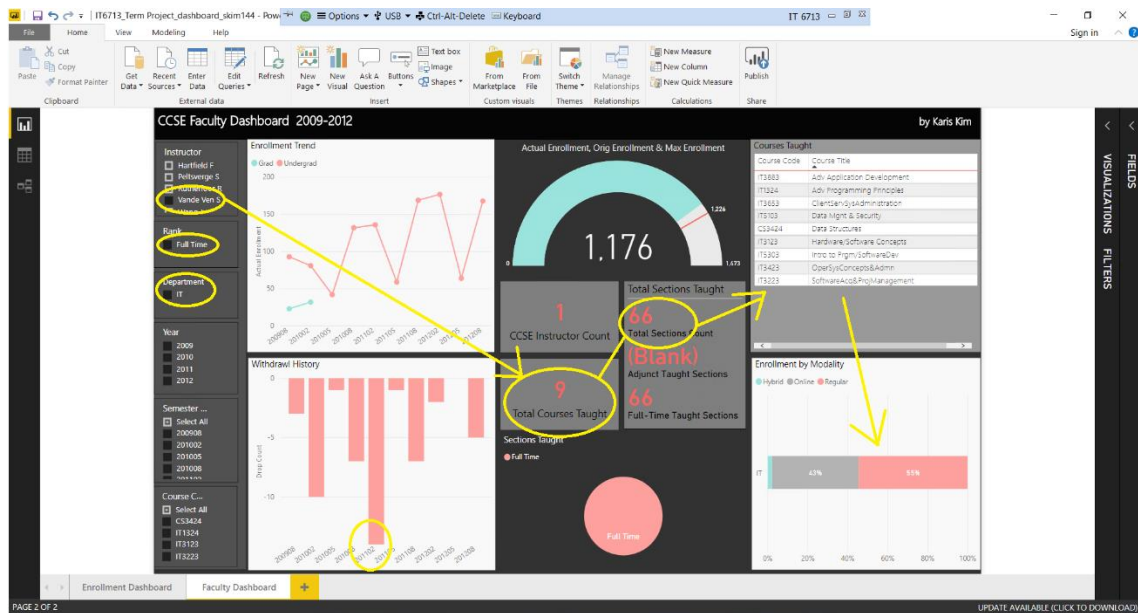
Above screenshot shows one full-time faculty, Professor S. Vande Ven. Professor Vande Van taught a total of 9 courses and 66 sections over 9 semesters in both Graduate and Undergraduate levels, and during that time frame, a total of 1,176 students (non-unique head count) were served. The title of the 9 courses Professor Vande Ven taught are listed in the Courses Taught table on the top right section of the dashboard, where we can also see that she taught IT and CS courses. Of those 66 sections, more than half were regular/in-class sections, and most of the rest were online. Of all the semesters, 2011 Spring had the most number of withdrawls (no screenshot), with a total of 14 drops over 9 sections she taught in that semester. All of those courses were IT Undergraduate, and 55% of those were online.

- Faculty as a whole by department (IT, CSWE), rank (professor, lecturer), employment status (full time, adjunct).
 The first of the following screenshots shows the faculty workload of all instructors in CCSE during 2009 Fall to 2012 Fall in all departments.
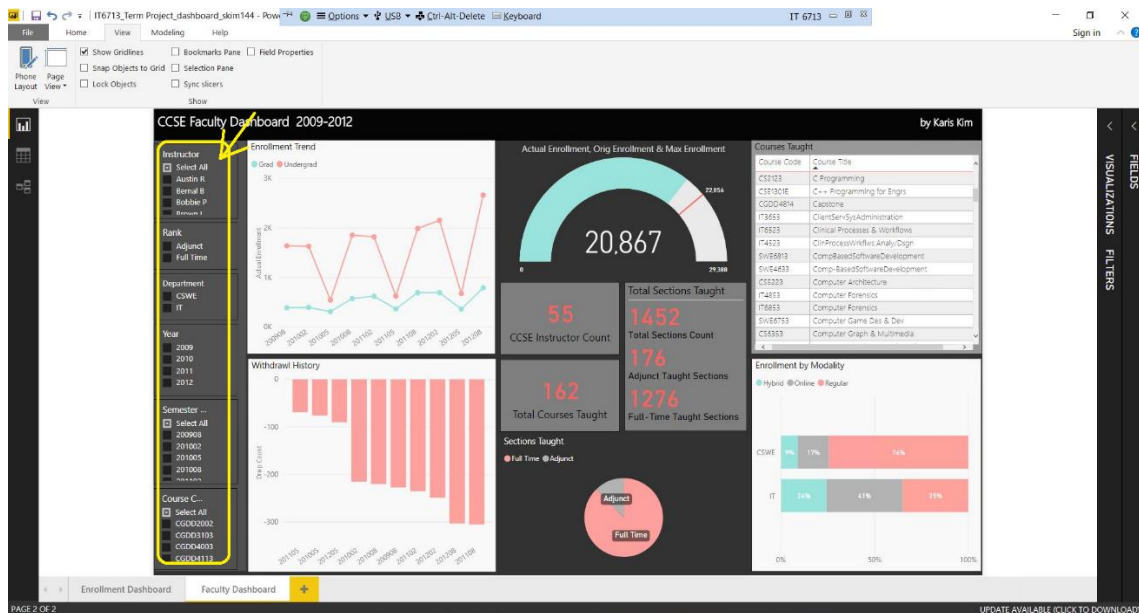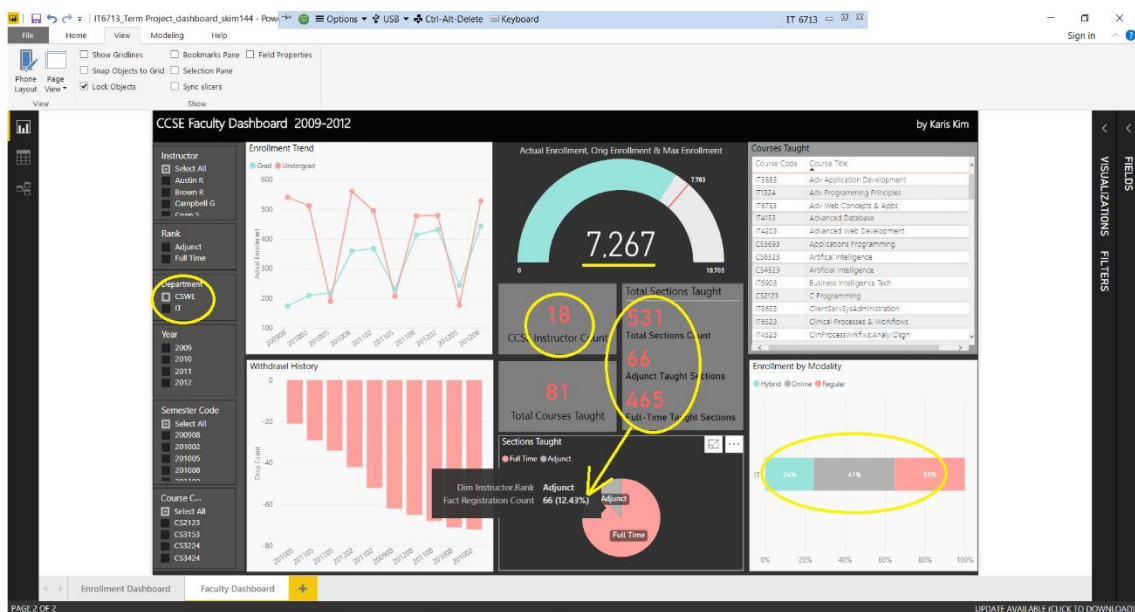
Above screenshot shows that during this time frame, a total of 55 instructors taught 162 unique courses over 1,452 sections and served 20,867 students (non-unique head count) in CCSE. Of those sections, 176 sections were taught by adjuncts, and by hovering the mouse over the Sections Taught pie chart (no screenshot), sections by adjuncts amounts to 12% of total sections, and the remaining 88% were taught by full-time instructors. Of the 1,452 sections, 74% of CSWE department courses were regular/in-class sections, and more than half of IT department courses were online and hybrid. By drilling up in the Enrollment by Modality chart (no screenshot), data shows that the Undergraduate level had 70% regular/in-class sections, while the Graduate had only 33% regular and 43% online. The Enrollment Trend chart shows that the Undergraduate level had a sharp increase in enrollment in the latest semester, 2012 Fall, accompanied also by the highest withdraw count.

The following two screenshots compare faculty workload for CSWE and IT departments.
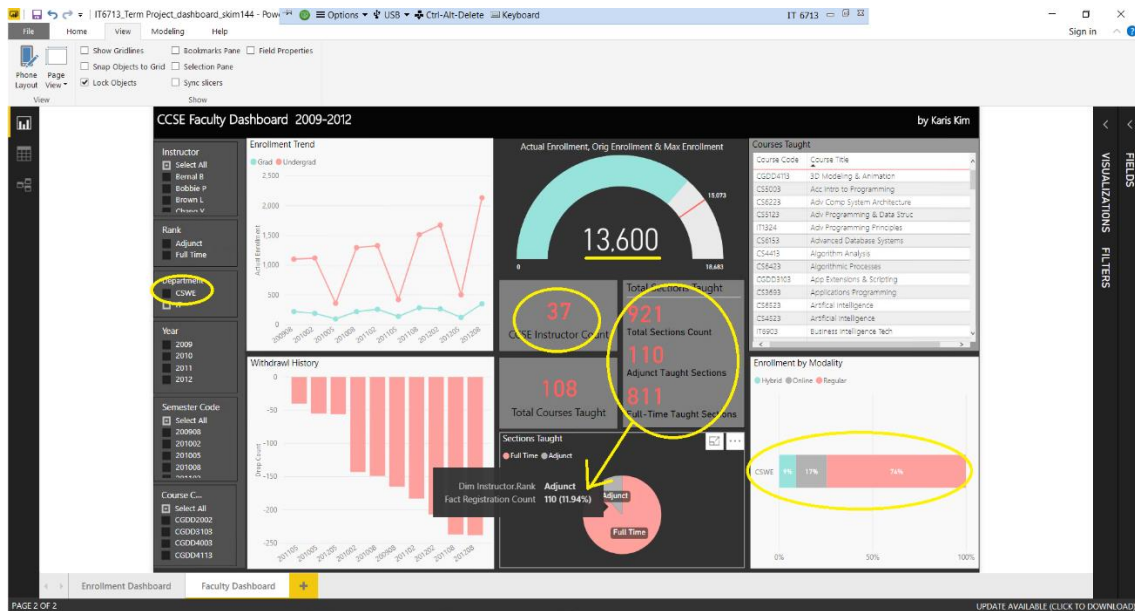
Above screenshot shows that a total of 37 instructors taught a total of 13,600 students (non-unique head count) in the CSWE department during 2009 Fall and 2012 Fall. A total of 108 unique courses and 921 sections were taught in that time frame. The titles of those courses are listed in the Courses Taught table on the top right section of the dashboard. Of those sections, 110 were taught by adjunct instructors, which is about 12% of the total sections. Of 921 sections, the vast majority- 74%- were regular/in-class sections in the CSWE. As we have seen in the Enrollment Dashboard, the latest semester has the highest enrollment and withdraw rates.

Above screenshot shows that a total of 18 instructors taught a total of 7,267 students (non-unique head count) in the IT department during 2009 Fall and 2012 Fall. A total of

81 unique courses and 531 sections were taught in that time frame. The titles of those courses are listed in the Courses Taught table on the top right section of the dashboard. Of those sections, 66 were taught by adjunct instructors, which is about 12% of the total sections, and remaining 88% were taught by full-time instructors. Of 531 sections in IT, only 35% were regular/in-class sections, while 41% were online and 24% were hybrid. As we have seen in the Enrollment Dashboard, the biggest difference between CSWE and IT department aside from the total number of students and instructors, is that a much greater portion of the IT department sections are online, while a majority of the CSWE sections are regular/in-class. In another view of the IT department faculty dashboard below, we can see that the Graduate level of IT has significantly more online and hybrid sections, with a mere 14% in regular sections.