Syracuse University iSchool_IST659 M003 Fall 2015

Data Administration Concepts and Database Management

Career Counselling System

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Version <v.02>

Instructor Name: **Nicholas C. Bucciarelli**

Contents

Revisions

Version	Primary Author(s)	Description of Version	Date Completed
v.01	Ishani Jariwala	Mapping the correct relationship in the data structure. Created Data structure and inserted meaningful data into it.	11/18/2015
v.02	Ishani Jariwala	Final editing of the report	11/30/2015

1 Project Proposal

Business Description

Many a time's students are in dilemma over which career path to choose for them. Career Counselling System helps student in choosing the right career based on their field of education or area of interest. This system can help students in selecting the optimum career path for them, by mapping their queries to an appropriate expert from the expert panel.

The assumption for the proposed system is the experts for each fields for the career counselling are registered with the system.

Problem Statement

Student often are deprived of career counselling. This career counselling system can help students seek a genuine advice to craft their career. Currently there are no genuine medium through which students can seek guidance. There is a need of such authentic system where the best experts are placed in panel who can craft the student's career.

Proposed solution

When the student sends an enquiry mentioning their confusion and category (Field). This query will be mapped with expert entity where all experts will be listed; and the student can schedule their appointment with experts. Also the students can take assessment test. The result of the test will decide in which category the student falls into and accordingly the expert is assigned. The questions for this aptitude test will be stored in a question_master and the correct answers to the question will again map the category and expert for the student.

Users

The Primary user is a Student in need of career counselling. Another user will be Experts in different fields of study.

2 Project Design Report

ENTITY AND ATTRIBUTE TABLE

Data Constructs	Data Types	Definition and Relationships
1. STUDENT_MASTER		Student seeking the career guidance.
1. STUDENT_ID	INTEGER	Primary Key for STUDENT_MASTER.
2. S_FNAME	VARCHAR (40)	First name of the student.
3. S_LNAME	VARCHAR (40)	Last name of the student.
4. S_PHONE_NO	VARCHAR (20)	Contact number of the student.
5. S_EMAILID	VARCHAR (30)	Email address of the student.
6. S_BIRTHDATE	DATE	Birthdate of the student.
7. S_CITY	VARCHAR (30)	City of the student.
8. S_STATE	VARCHAR (30)	State of the student.
9. S_COUNTRY	VARCHAR (30)	Country of the student.
10. CATEGORY_ID	INTEGER	Foreign Key of CATEGORY_MASTER. To map the students field of interest.
11. ACAD_STATUS_ID	INTEGER	Foreign Key of STATUS_MASTER. To know the present academic status of the student.
2. ENQUIRY_MASTER		To map the enquiries generated by student.
1. ENQUIRY_ID	INTEGER	Primary key for ENQUIRY_MASTER.
2. ENQUIRY_DATE	DATE	To know when the enquiry was raised.
3. STUDENT_ID	INTEGER	Foreign key of STUDENT_MASTER. To map the student who made the enquiry.
4. EXPERT_ID	INTEGER	Foreign key of EXPERT_MASTER. To know which student is assigned to which expert.

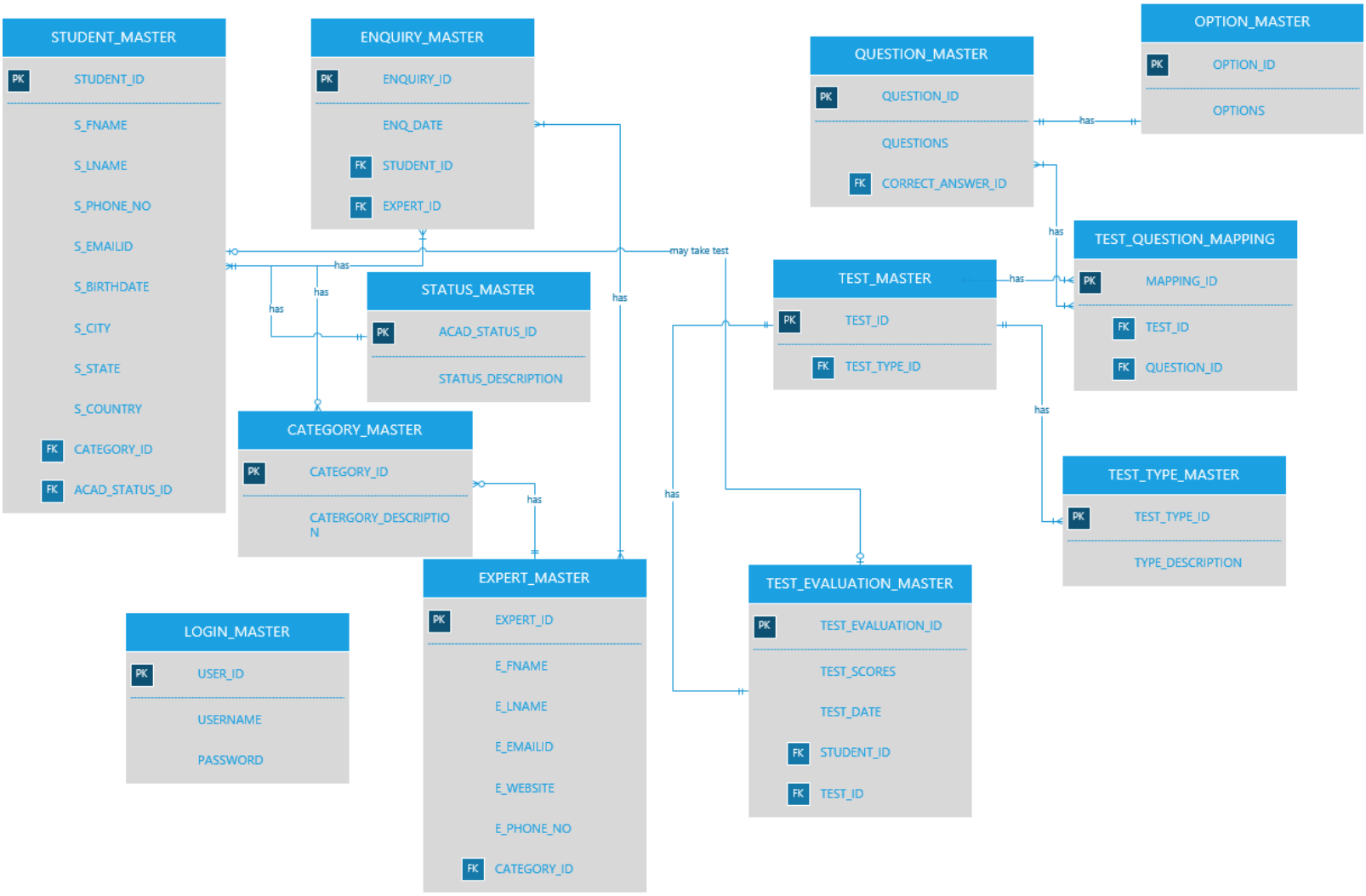
Data Constructs	Data Types	Definition and Relationships
3. STATUS_MASTER		To know the student's present academic status.
1. ACAD_STATUS_ID	INTEGER	Primary key for STATUS_MASTER.
2. S_STATUS	VARCHAR(30)	Could be : 1. Pursuing/completed graduation; 2. Above class 12; 3. Class 11-12; 4. Class 8-10.
4. CATEGORY_MASTER		Student's different areas of interest.
1. CATEGORY_ID	INTEGER	Primary Key for CATEGORY_MASTER.
2. CATEGORY_DESCRIPTION	VARCHAR(30)	Different types of categories like : 1. Management; 2. Professional; 3. Finance/Commerce; 4. Science; 5. Arts; 6. Engineering; 7. Law; 8. Medicine; 9. Actuary; 10. Economics.
5. EXPERT_MASTER		Experts who will give career advices to the students.
1. EXPERT_ID	INTEGER	Primary Key for EXPERT_MASTER.
2. E_FNAME	VARCHAR(40)	First name of expert.
3. E_LNAME	VARCHAR(40)	Last name of expert.
4. E_EMAILID	VARCHAR(30)	Email address of expert.
5. E_WEBSITE	VARCHAR(100)	Website of expert if any.
6. E_PHONE_NO	VARCHAR(20)	Contact number of the expert.
7. CATEGORY_ID	INTEGER	To map which category (field) the expert has expertise on. Foreign key of CATEGORY_MASTER.

Data Constructs	Data Types	Definition and Relationships
6. LOGIN_MASTER		As each student will have login access to the system; hence this table is used to store the login credentials.
1. USER_ID	INTEGER	Primary Key of the LOGIN_MASTER.
2. USERNAME	VARCHAR(40)	Student's email address is the username here.
3. U_PASSWORD	VARCHAR(40)	Student's password.
7. TEST_MASTER		To map tests and its types.
1. TEST_ID	INTEGER	Primary key for the TEST_MASTER.
2. TEST_TYPE_ID	INTEGER	Foreign Key of TEST_TYPE_MASTER.
8. QUESTION_MASTER		To store the test questions.
1. QUESTION_ID	INTEGER	Primary Key for QUESTION_MASTER.
2. QUESTIONS	VARCHAR(255)	Set of questions for test.
3. CORRECT_ANSWER_ID	INTEGER	Foreign Key of the OPTION_MASTER. Which maps the correct answer to the question.
9. TEST_TYPE_MASTER		To describe the types of tests for students.
1. TEST_TYPE_ID	INTEGER	Primary key for TEST_TYPE_MASTER.
2. TYPE_DESCRIPTION	VARCHAR(50)	The type of tests the students can take. It may include : 1. Aptitude test; 2. Personality test; 3. Interest test.

Data Constructs	Data Types	Definition and Relationships
10. TEST_EVALUTION_MASTER		To record the test evaluation of the student.
1. TEST_EVALUATION_ID	INTEGER	Primary Key for TEST_EVALUATION_MASTER.
2. TEST_SCORE	VARCHAR(50)	Student's score that is evaluated.
3. TEST_DATE	DATE	Date on which the test was taken by student.
4. STUDENT_ID	INTEGER	Foreign Key of STUDENT_MASTER. To know which student took the test.
5. TEST_ID	INTEGER	Foreign key of TEST_MASTER. To know which test the student have taken.
11. TEST_QUESTION_MAPPING		To map the tests and their respective questions.
1. MAPPING_ID	INTEGER	Primary key for TEST_QUESTION_MAPPING.
2. TEST_ID	INTEGER	Foreign key of TEST_MASTER. To know which test the student have taken.
3. QUESTION_ID	INTEGER	Foreign key of QUESTION_MASTER. To know which questions to be given to the student who have taken the test.
12. OPTION_MASTER		To give options to the questions in tests.
1. OPTION_ID	INTEGER	Primary Key for the OPTION_MASTER.
2. OPTIONS	VARCHAR(50)	Set of options to be given for each questions in test.

This table above describes the data constructs, relationships, data types and definition of the entire Career Counselling System.

RELATIONAL DATA MODEL



As seen in ERD, the Database is fully normalised keeping in mind the mapping cardinalities. In order to remove one-to-many relationships, a third mapping table has been made. For example – In order to know which students are under one expert, we have ENQUIRY_MASTER that explains one-to-many relationship as one expert can have many students seeking advice from him/her. Similarly one-to-one and many-to-many relationships are handled as seen in the ERD model above.

BUSINESS RULES

1. Student must raise an enquiry to the system with their query.
2. Each student will be having a separate login to access the system.
3. Student can directly seek a counselling from Experts in their field of interest.
4. Students also have a counselling through a career assessment test. The system presents a set of questionnaire and collects the answers from the student. The system generates a career that fits best as per the students skill set.
5. Each student can take counselling with only one expert at a time.
6. Each student must provide their personal and academic information.

3 Project Implementation Report

This project focuses on designing a database for Students who can seek Career advices from their interested fields (career categories) Experts. Many a time's students are in dilemma over which career path to choose for them. Career Counselling System helps student in choosing the right career based on their field of education or area of interest. This system can help students in selecting the optimum career path for them, by mapping their queries to an appropriate expert from the expert panel.

Student often are deprived of career counselling. This career counselling system can help students seek a genuine advice to craft their career. Currently there are no genuine medium through which students can seek guidance. There is a need of such authentic system where the best experts are placed in panel who can craft the student's career.

When the student sends an enquiry mentioning their career confusion and category (Field). This query will be mapped with expert entity where all experts will be listed; and the student can schedule their appointment with experts. Also the students can take assessment test. The result of the test will decide in which category the student falls into and accordingly the expert is assigned. The questions for this aptitude test will be stored in a question_master and the correct answers to the question will again map the category and expert for the student.

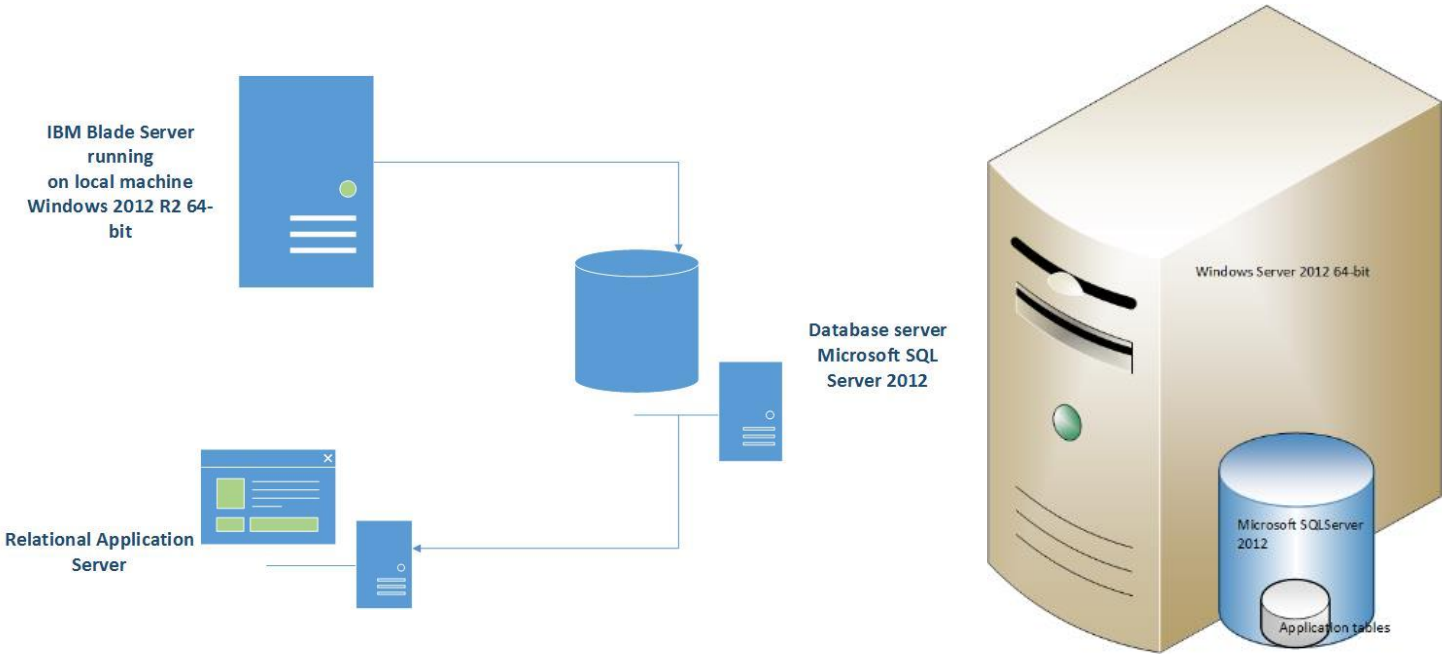
This project has been implemented on a relational database management system hosted on a Windows server. SQL Server 2014 has been used as the RDBMS and is deployed on the Windows Server 2012 64bit server. The RDBMS was accessed using SQL Server Management Studio and Visio 2013 is used to design the ER model.

The process of the database application can be described as –

IBM Blade Server on the local Windows 2012 R2 64-bit machine will be connected to the Internet. Through this any student from any corner of the world can access Career Counselling System.

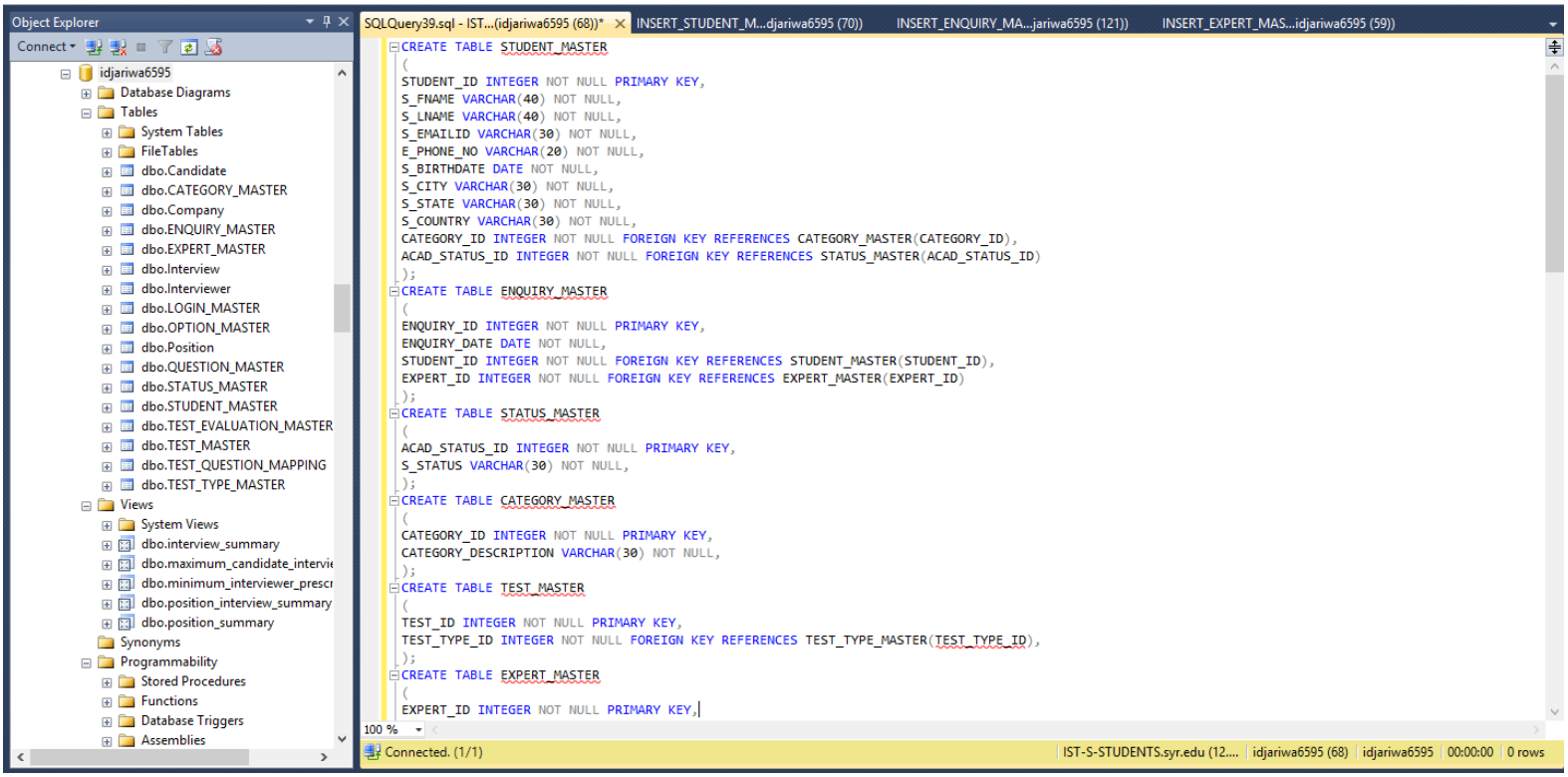
The Database server Microsoft SQL Server 2012, mounted on the local machine has the entire data structure of Career Counselling System. This enables the Student login into the system and create their account. Through the account they can directly seek the career advices from Experts. Also the students can take assessment test and then depending on the result can seek advice from the experts.

This Database Server is accessed by Relational Database Server which displays the information on the front-end to the user. Here as the system will be working through a website than the way the Student interacts with the system, the resulting information will be displayed on the screen of the website. The website can be made through any programming language. The Job of the relational database server is to fetch information from the database and display it to the front-end system.



Database Structure

Creation of tables and inserting values into it:



The database has been created in MS SQL Server 2012 with the name "**idjariwa6595**".

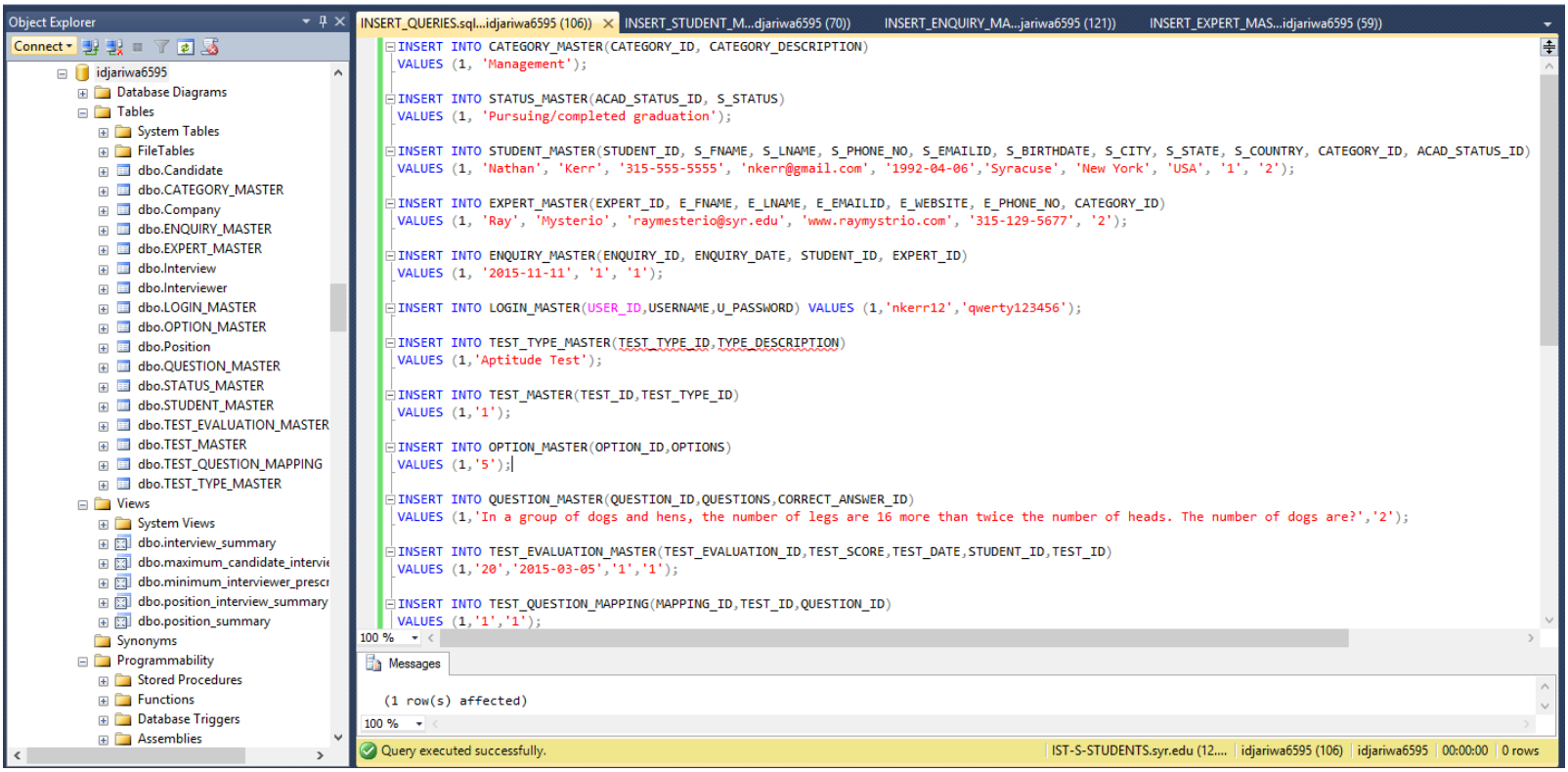
This database consists of the tables of the class labs (They are named with lower cases) and my project (Named with UPPERCASE). Project database tables are:

[dbo].[CATEGORY_MASTER], [dbo].[ENQUIRY_MASTER], [dbo].[EXPERT_MASTER], [dbo].[LOGIN_MASTER], [dbo].[OPTION_MASTER], [dbo].[QUESTION_MASTER], [dbo].[STATUS_MASTER], [dbo].[STUDENT_MASTER], [dbo].[TEST_MASTER], [dbo].[TEST_EVALUATION_MASTER], [dbo].[TEST_QUESTION_MAPPING] and [dbo].[TEST_TYPE_MASTER]

The data structure is normalised and is designed to serve a helping hand to the students who needs career counselling.

Inserting Data into the tables created:

The database has been created in MS SQL Server 2012 with the name "idjariwa6595". All the tables have relevant data entry in the system.



SQL File:

CareerCounsellingSystem.sql