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# CSG1207D Systems and Database Design

# Assignment Task 2 – (Implementation and Testing)

# Semester 2, 2015

**Assignment:** Task 1 (Database Analysis and Design), Task 2 (Implementation and Testing)

**Assignment Marks:** Marked out of 120, (30% of unit)

Task 1 is marked out of 40, (10% of unit)

Task 2 is marked out of 80, (20% of unit)

**Due Dates:** Task 2 (Implementation & Testing): 12 noon, Mon 31/08/15 (Week 11)

Task 2 Demonstration: during class Mon 7/09/15 (Week 12)

**Learning Outcomes**

This assignment addresses the following learning outcomes from the Unit Outline:

1. use Data Analysis to design a Database;

3. implement a Database design using a Database Management system (DBMS), and

to construct complex queries upon it;

**Task 2 – Implementation and Testing**

Once your database has been designed, it is time to implement it in a DBMS, populate the database, and then manipulate the data via queries. You should incorporate any feedback on Task 1 you were given by your lecturer by modifying your design document. If the database you implement includes anything you had not included in your database design (Task 1), **include an updated database design document**, which includes the changes/additions to the design you submitted for Task 1. This will include your ERDs and TICs.

Also, make sure you show table creation order by annotating your physical ERD. Alternatively, you may create a list showing table creation order.

Format your scripts for readability, and make sure you use comments if you wish to provide further detail or information about your scripts. **All SQL scripts must be written in Courier font and must contain a header in the following example format**:

Copy this from the queries shown below

/\*

Name of script: Query 1 – Store Shifts

Author: *your name*

Date written: 04/08/2014

Purpose: Display details of shifts worked at each store. The output includes the names of the store, the name of the store manager, the date and start and end times of the shifts and the names of the staff members working each shift. The results are ordered by the date of the shifts, then by start times, in chronological order of shift date.

\*/

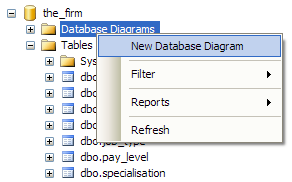
**Make sure you show all output for every script that you use. If there is no output, write “No output” after the script.**

**Database Creation Script**

Produce a script to create the database you designed in Task 1 (incorporating any changes you have made since then). Be sure to give your columns the same data types, properties and constraints specified in your Table Instance Charts, and be sure to use a consistent naming scheme.

Make sure this script can be run *multiple times* without resulting in any errors. Examine the creation scripts of the sample databases available in Moodle for an example of how to do this.

Once you have created your database, you should use SSMS to create an ER diagram to verify that your implementation matches your design. This can be done by right clicking on the “Database Diagrams” folder of the database in the Object Explorer in SSMS.



*(creating an ER diagram in SQL Server Management Studio)*

**Database Population Script**

Write a script consisting of INSERT statements that populates the tables of your database with sufficient data for testing. Make sure all referential integrity is observed. Ensure that you create enough data and that it is varied enough to make *all of the following queries return meaningful results*.

You will possibly find the need to create additional data in order for the following queries to return appropriate results – be sure to *update this script* to include the data you added if that is the case.

Think carefully about the test data you need to create. For example, to display meaningful results for Query 3, you will need to have some staff who do not mentor other staff, otherwise you will not have any output.

Consider using <http://www.generatedata.com/>. You are welcome to use this (or other tools) to generate data for your tables. If you choose to use a data-generating tool, it is still very important that you understand and can write INSERT statements yourself – you will not have access to data generating tools in your exam.

Views

Staff Availability View

Create a view which shows all details of all staff and their availability details. The view should include the last name and first name of the staff member, the full name of their mentor (if any), their hourly salary and the days and times they are available for work. Sort the output by staff last name, then first name.

**Show the output of this view.**

Pay View

Create a view which shows all details of how much each staff member should be paid for the hours they have worked. The view should contain the following columns:

* The full name of the staff member (in the form of “surname, first name”), the pay level name, the shift ID, and date, start time and end time of the shift, and the store name at which the shift was worked
* A column named “Pay”, which is defined as the number of hours of the shift multiplied by the hourly salary
* A column named “Super”, which multiplies the number of hours worked by the super rate.

**Show the output of this view.**

Query 1 – Store Shifts

Produce a query to display details of shifts worked at each store. The output should include the names of the store, the name of the store manager, the date and start and end times of the shifts and the names of the staff members working each shift. Order the results store name, then by the date of the shifts, then by start times.

Query 2 – Store Suppliers

Produce a query to display the stores and the suppliers which supply products to those stores. Show the names of the store and the managers of the store, the supplier name, contact name and phone number of the supplier.

…….

Query 3 – Non-mentoring staff

Produce a query that shows the details of all staff who do not mentor other staff. Order the results by last name, then first name. Give a suitable column heading. Format the output using the following example:

BLOGGS, Joe does not mentor other staff

Query 4 – Shift Statistics

Produce a query that shows the store name, the number of shifts worked, the number of hours worked, and the number of staff employed during a given month. Order the results by number of hours worked (highest to lowest) and be sure to give all columns appropriate names.

Query 5 – Store Spend

Produce a query to display the name of three stores that spend the most money on purchasing products. Show the store name, the manager name, and the total amount of money spent on purchasing products. Order the results by the total amount of money spent.

Query 6 – Number of Suppliers

Produce a query to display the number of suppliers each store deals with. Sort the output by number of suppliers, with the largest number of suppliers at the top.

Query 7 – Store Activity

Produce a query to display the following details:

* The name of the store and the store manager’s name
* The number of shifts in a given month
* The average shift length in hours for each store in the given month

Sort the output in descending order of the number of shifts, and average shift length. Show only the three stores with the highest number of shifts in the month.

Query 8 – Superannuation Payments

Management needs to know how much super payments they need to make for a particular fortnight. Write a query to show, for a store and fortnight of your choosing, the total amount of super payments that must be made.

Query 9 – Non-working Staff

Write a query to show the staff members who have not worked for at least 4 weeks. Show their names and contact details. Show the staff member who not worked for the longest period at the top of the display.

Query 10 – Menu

Write a query to produce a menu of the all the products available. Show the following information:

* The product name, description and price for all products
* The fat content, protein content and type for “Healthy” products
* The fibre content, carbohydrate content and type for “Vegetarian” products

Hint: You will need to use the UNION clause to do this. Research this on the Internet.

## Database Documentation

Download and execute the 2 scripts available on Moodle to create a database schema and a list of constraints. See the links under Week 13 in Moodle. You **must** check the schema and list of constraints against your TICs. **Include this in your assignment document**.

## Presentation, Notation, Formatting and Submission

**IMPORTANT!! Read and comply with the following**

1. You must submit your marked Assignment Task 1 **together** with a hard copy of Task 2.

2. List each SQL script/query required for Task 2, followed by the output from the execution of the script/query in SQL Server. If there is no output from your script/query, type “No output”.

3. Include a PIBT Assignment and Report Cover Sheet as the **first** page. Insert a completed copy of the Work Allocation Plan (second last page of this document) and include it in your document as the **second** page, after the Assignment and Report Cover Sheet. Insert a completed copy of the Marking Key (last page of this document) and include it in your document as the **third** page, after the Assignment and Report Cover Sheet and the Work Allocation Plan.

4. **Make sure you include page numbers in your document!** You should do this for **any** multi-page document you create. See the page numbering format of this document as an example.

5. Email a copy of your Task 2 document to [richard.potger@optusnet.com.au](mailto:richard.potger@optusnet.com.au) . Make sure that I can copy your entire creation and population script so that I can copy it into SSMS on my laptop and run it to create a copy of your database. **I need to do this to test your database**. If you do not do this I cannot mark your assignment.

## Demonstration

You will be required to give a demonstration of your database in Week 12. This will consist of running a few scripts as requested by your tutor. **Please note that if you are not present for the demonstration you will not be awarded your share of the marks for the assignment.**

## Deductions

Deductions for late submission will be applied in accordance with the Unit Outline.

**PLEASE NOTE:** If you are late in submitting your assignment, you should email me a copy and then give me a hard copy in class the following week. I will accept the date/time of your email to me as the date/time of your submission and a deduction for late submission will be applied accordingly.

## Plagiarism

Plagiarism means to knowingly or unknowingly present as one's own work the ideas or writings of another without appropriate acknowledgment or referencing, including:

* Paraphrasing text without acknowledging source (includes any copying)
* Paraphrasing text inadequately
* **Copying another student's assignment (from any source)**
* **Copying of visual representations (cartoons, line drawings, photos, paintings, computer programs, images, tables, graphs)**

The entirety of your assignment must be your own work, and produced for the current instance of the unit. Penalties for plagiarism will be applied in accordance with PIBT policy.

**CSG1207D – Systems and Database Design**

**Assignment - Task 2**

## Work Allocation Plan

**Student Names/IDs: Sato Daiki / 60012070**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Criteria** | **Allocated To** | **Start**  **Date** | **Finish**  **Date** | **Status** |
| **Task 2 – Implementation and Testing**  All scripts are judged on correctness, appropriateness and readability of SQL code. | MySelf | August 31st, 2015 | September 1st, 2015 | Finish |
| **Database Creation Script** – Must accurately implement database design and must correspond to TICs. (7 marks) | MySelf | August 31st, 2015 | August 31st, 2015 | Finish |
| **Database Population Script** – Must insert enough appropriate test data for queries. (5 marks) | MySelf | August 31st, 2015 | August 31st, 2015 | Finish |
| **Staff Availability View** (5 marks) | MySelf | August 31st, 2015 | August 31st, 2015 | Finish |
| **Pay View** (5 marks) | MySelf | August 31st, 2015 | August 31st, 2015 | Finish |
| **Query 1 – Store Shifts** (5 marks) | MySelf | August 31st, 2015 | August 31st, 2015 | Finish |
| **Query 2 – Store Suppliers** (5 marks) | MySelf | August 31st, 2015 | August 31st, 2015 | Finish |
| **Query 3 – Non-mentoring Staff** (5 marks) | MySelf | August 31st, 2015 | August 31st, 2015 | Finish |
| **Query 4 – Shift Statistics** (5 marks) | MySelf | August 31st, 2015 | September 1st, 2015 | Half done |
| **Query 5 – Store Spend** (5 marks) | MySelf | August 31st, 2015 | September 1st, 2015 | Finish |
| **Database Documentation**  ERD showing Table Creation Order - 1 mark  Database Schema - 1 mark  List of Constraints - 1 mark | MySelf | September 1st, 2015 | September 1st, 2015 | Finish |
| **Presentation, Notation and Formatting (5 marks)**  Assignment is well presented, uses consistent and appropriate notation, and scripts are well formatted and documented. ERDs showing Table Creation Order are included. | MySelf | August 31st, 2015 | September 1st, 2015 | Finish |

## CSG1207D – Systems and Database Design

## Assignment – Task 2

## Mark Allocation

**Student Names/IDs: Sato Daiki / 60012070**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Task 2 – Implementation** | | | | | | |
| **Criteria** | | | **Done**  **By** | **Reviewed By** | **Max Mark** | **Your Mark** |
| **Database Creation Script** – Must accurately implement database design and must correspond to TICs | | | Myself | Myself | 7 |  |
| **Database Population Script** – Must insert enough test data for queries. | | | Myself | Myself | 5 |  |
| **Staff Availability View** | | | Myself | Myself | 5 |  |
| **Pay View** | | | Myself | Myself | 5 |  |
| **Query 1 – Store Shifts** | | | Myself | Myself | 5 |  |
| **Query 2 – Store Suppliers** | | | Myself | Myself | 5 |  |
| **Query 3 – Non-mentoring Staff** | | | Myself | Myself | 5 |  |
| **Query 4 – Shift Statistics** | | | Myself | Myself | 5 |  |
| **Query 5 – Store Spend** | | | Myself | Myself | 5 |  |
| **Database Documentation**  ERD showing Table Creation Order - 1 mark  Database Schema - 1 mark  List of Constraints - 1 mark | | | Myself | Myself | 1  1  1 |  |
| **Presentation, Notation and Formatting**  Assignment is well presented, uses consistent and appropriate notation, and scripts are well formatted and documented. ERDs showing Table Creation Order are included. | | | Myself | Myself | 5 |  |
| **Total marks** | | | | | | **/80** |
|  | **Deductions** | **No Mark Allocation/cover sheet** | | | **-2** |  |
|  |  | **Late Penalty** | | | **5% per day** |  |
|  |  |  | | | **Final mark** | **/20** |

**Feedback**

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