# CSG1207D Systems and Database Design

# Assignment Task 1 - (Database Analysis & Design)

# 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:** Submit Work Allocation Plan to lecturer on Mon 06/07/15 (Week 4)

Task 1 (Database Analysis & Design): 12 noon, Mon 20/07/15 (Week 6)

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

**Learning Outcomes (Why are you doing this assignment?)**

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

1. use Data Analysis to design a Database (Task 1);

3. implement a Database design using a Database Management system (DBMS), and to construct complex queries upon it (Task 2).

**General Assignment Information**

Your first task is to design a database for the scenario detailed on the following pages. State any **assumptions/notes** you have made regarding your database design at the beginning of the database design document. Do not make any assumptions/notes that change the structure of the scenario, as this may make Task 2 of the assignment difficult. Only make assumptions/notes that influence your database design. If you are unsure about an assumption you wish to make, ask your lecturer/tutor.

Once you have identified the entities, attributes and relationships of the scenario in sufficient depth, you are required to create a **logical** **ER diagram** and a **physical ER diagram** to depict your database. Adhere to the distinctions between logical and physical ER diagrams covered in lectures. It is recommended that you sketch out your diagrams on paper first, in order to find a layout that is clear and can be created in an electronic format.

Lastly, create a **Table Instance Chart (TIC)** for each entity in your data model. List your TICs in the appropriate table creation orderthat will need to be used to create the database. Include any additional information, if any, that may be needed to implement the database. Remember, the TICs should contain **all the information needed** to implement your database. Download a sample Table Instance Chart from Moodle.

Your complete database design should consist of a list of assumptions/notes, logical and physical ER diagrams and TICs. This should be in the form of a single word-processed document. Include a PIBT Assignment Coversheet on the first page of this document. Be sure to include details of both team members if appropriate. You **must also include** the Marking Guide and the Work Allocation Plan (shown at the end of this document) as part of your submission.

You **must use** [www.gliffy.com](http://www.gliffy.com) (or any other modelling tool you are familiar with) to draw your ERDs. Show Primary and Foreign Keys as such: CustomerID (PK) and CustID (FK). **Do not underline** as it is difficult to see and it is even harder when you have an attribute that is a PK as well as an FK. Instead of underlining use this format: OrderID (PK, FK), ProductID (PK, FK).

## Scenario Details

Fast And Tasty (FAT) is a small chain of fast food stores. You have been hired to design a database system for FAT. The database must store details about staff, their shifts at stores, staff pay and suppliers of FAT and FAT products. You have been given the following information about the way FAT operates. Note that the information required below is the **minimum**. You may need to add other information to satisfy the reporting requirements specified in Task 2.

* FAT staff may have shifts at multiple stores, and each store has multiple staff members.
* The database must contain staff names, contact details, gender, date of birth and information regarding what days/times the staff are available to work.
* To make it easier for new staff members, a more experienced staff member is assigned to be their mentor. This must be represented in the database.
* The database must contain details of FAT stores, including a short name/location, a full address and details of opening hours.
* Each store has a manager, who is one of the staff members. A staff member only ever manages one store.
* A shift involves a staff member working at a store. The only shift details that need to be stored are the date of the shift, the starting time, and the ending time.
* Each staff member is paid according to their pay level, named from A to E. Each pay level specifies a different hourly salary and the percentage of superannuation received. The pay levels are detailed in the table below:

|  |  |  |  |
| --- | --- | --- | --- |
| Pay Level | Pay Level Name | Hourly Salary | % Superannuation |
| A | Trainee | $12 | 2 |
| B | Junior | $15 | 3 |
| C | Senior | $18 | 4 |
| D | Assistant Manager | $30 | 8 |
| E | Manager | $40 | 12 |

* Suppliers are businesses that supply products to FAT stores. The database must contain details of suppliers, including their business name, ABN, information regarding what products they supply, the contact person’s name and their contact details.
* Each supplier may supply multiple FAT stores, and each FAT store may be supplied by multiple suppliers. Details of supply deliveries do not need to be stored, simply the relationships between stores and suppliers.
* FAT products are divided into two categories. These categories are “Healthy” and “Vegetarian”. All products have details about the name of the product, the price, the serving size, and a description. Additionally, “Healthy” products include information about the amount of fat and protein, the amount of calories per serve and sugar content, while “Vegetarian” products include information about the fibre content, the amount of sodium, carbohydrate content and the amount of calories per serve.
* Not all FAT stores serve the same set of products. Some of the smaller FAT stores serve a reduced menu because of local demand.

**General Information and Guidelines**

The information above describes all of the entities and relationships required in the database design. Some details, such as the cardinality of some relationships, have been omitted. It is up to you to

make and state any assumptions/notes you need in order to complete the database design. If you are uncertain about any part of the scenario described above, seek clarification from your lecturer.

It is strongly recommended that, where appropriate, you give each entity an auto-incrementing integer attribute as a primary key. Be sure to specify appropriate data types (and lengths, where applicable) for all columns in your Table Instance Charts.

Read the scenario details several times to ensure that your database design incorporates **all** the elements described. If you are uncertain about any part of the scenario described above, seek clarification from your lecturer.

**Submission Requirements**

Submit your database design as a single word-processed document by the Task 1 due date above. Include a PIBT Assignment and Report Cover Sheet as the first page. Complete a copy of the Work Allocation Plan and the Mark Allocation (last page of this document) and include it in your document, after the PIBT Assignment and Report Cover Sheet. **Your assignment will not be marked unless it complies with these requirements.**

Late submissions will be penalised according to 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.

**Assignment – Task 1**

**Work Allocation Plan (Show lecturer in Week 4)**

**Student Names/IDs: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Criteria** | **Allocated to** | **Start**  **Date** | **Finish**  **Date** | **Status** |
| **Task 1 - Design** |  |  |  |  |
| **Assumptions –** All/Any assumptions/notes that influence the database design clearly stated. (3 marks) |  |  |  |  |
| **Logical ER Diagram -** Diagram accurately depicts the scenario and includes all elements specified in the scenario. (9 marks) |  |  |  |  |
| **Physical ER Diagram -** Diagram accurately depicts the scenario and includes all elements specified in the scenario. Diagram is correct translation of the logical ER diagram. **Table creation order is shown.** (8 marks) |  |  |  |  |
| **Table Instance Charts -** Include details of all tables, **excluding delete and business rules**. The TICs are shown in table creation order. (20 marks) |  |  |  |  |

**Assignment – Task 1**

**Mark Allocation**

**Student Names/IDs: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Criteria** | **Done**  **By** | **Reviewed By** | **Max Mark** | **Your Mark** |
| **Task 1 - Design** | | | | |
| **Assumptions –** All/Any assumptions/notes that influence the database design clearly stated. |  |  | 3 |  |
| **Logical ER Diagram -** Diagram accurately depicts the scenario and includes all elements specified in the scenario. |  |  | 9 |  |
| **Physical ER Diagram -** Diagram accurately depicts the scenario and includes all elements specified in the scenario. Diagram is correct translation of the logical ER diagram. **Table creation order is shown**. |  |  | 8 |  |
| **Table Instance Charts -** Include details of all tables, **excluding delete and business rules**. The TICs are shown in table creation order. |  |  | 20 |  |
| **Total for Task 1** | | | | /40 |
| **Percentage for Task 1** | | | | /10% |

**Feedback and markers comments:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

***~ End of Assignment ~***