

Module Title:	Advanced Databases
Module Code:	HCCENCI2 / BSHCE2
Lecturer:	Clive Gargan
Level:	8
Assessment Title	Database Design & Development
Assessment Number:	1 of 1
Restrictions on Time/Length	N/A
Individual/Group:	Individual
Assessment Weighting:	40%
Due Date:	24 <sup>th</sup> April 6pm
Feedback Date:	Hand in date plus 2 weeks
Mode of Submission	Moodle only

## **Assessment Overview**

The assignment focuses on the technical design and development of a Data Mart for a Financial Services company accompanied with a Technical Design document.

## **Assessment Task**

BankCorp Ltd. offer Wealth Management and Investment Services to its Personal and Corporate clients. Currently, data is stored in a number of systems across the company. This leads to “double keying” and as a result inefficiencies and errors.

They want to create a single database to consolidate all these details into one single source. They want you to design and develop the database only. Any data migration tasks will be taken care off in a future different project. The data model must be designed to meet 3NF (Third Normal Form) requirements.

***In terms of the key entities they have given you the following list:***

- 1 Customers
- 2 Accounts
- 3 Securities
- 4 Associations

A customer can have many accounts and an account can be secured by many securities. A customer can be associated to another customer in the bank e.g. a Property Development company may be associated with a Surveying company.

Associations can be two-way. For example-

Company A is the Surveyor of Company B

Company B has Surveyor Company A

A customer cannot be associated to another customer more than once under the same Association Type.

***In terms of data updates they have the following requirement:***

- They want the ability to create a new Customer and Association (from the newly created customer to another customer) via a parameterised Stored Procedure. **(Note: This is to be implemented as a single Stored Procedure).**
- They want the ability to delete a customer and foreign key records associated with this Customer via a parameterised Stored Procedure. **(Do NOT use Cascade. You must explicitly delete the records using DELETE statements)**

***In terms of reference data they have the following requirement:***

Accounts, Securities and Associations can be of several types. They do not want many tables to store each of these types. They want you to come up with a generic way to store all reference data in the database.

In addition to this reference data may be removed from the database from time to time – they want any reference to data which has to be removed is done as a “soft delete” as opposed to a “hard delete”.

This way it will remain in the database but will not be visible to the user.

***In terms of MI (Management Information) Reporting they see real value in having a single view on all their clients and the touch points between them and as such want the following extract:***

They want an MI extract created as a SQL View which will return the association details between all clients (both sides of the relationship!!!). This View needs to be secured so that no modifications to the underlying schema impact the View.

#### ***Deleted Reference Data View***

The company also want visibility of what Reference Data has been deleted. They want to be able to query a SQL View which shows all reference data which has been deleted.

They have come to you as an IT Consultant and they want these requirements developed into an enterprise solution. Along with the final solution you must supply the customer a Technical Design Document with the technical design details of the solution.

## Technical Document

The accompanying Technical Document should cover (but not limited to):

1. Scope of the document.
2. Technical Design to include:
  - a. ER Diagram
  - b. Physical Model in Third Normal Form (3NF)
  - c. Data Dictionary
  - d. Technology used
  - e. Embedded SQL File containing all DDL and DML statements.
3. Testing.
4. Data Governance & Security
5. Reflection on Learnings.
6. References.

## Project Deliverables

The distribution of assessment marks will be as follows:

Deliverable	Breakdown of Marks	Submission Date
Technical Document (Should not be less than 300 words)	20%	24 <sup>th</sup> April 6pm
Database Design & Development	80%	24 <sup>th</sup> April 6pm

ASSESSMENT CRITERIA Criteria/Mark	< 40	40 - 49	50 - 59	60 – 69	70+
<b>Database Design &amp; Development (80%)</b>					
<b>Database with at least five tables properly designed: 40%</b>	Poor database design with less than five tables.	At least five tables with correct data types.	At least five tables with correct data types and correct Primary Keys.	At least five tables with correct data types and correct Primary Key and Foreign Keys.	Excellent database design with correct data types and correct Primary Key and Foreign Keys.
<b>Constraints 10%</b>	None or incorrect constraints.	Some constraints but incomplete.	All constraints but does not enforce uniqueness.	All constraints but does not enforce complete uniqueness.	Excellent use of constraints ensuring complete uniqueness.
<b>Stored Procedures 10%</b>	Stored Procedure not executing or executes and updates/ returns no fields.	Stored Procedure executes and updates some fields for a single customer.	Stored Procedure executes and updates all fields for a single customer.	Stored Procedure executes and updates all fields for a single customer and some fields for all customer records.	Stored Procedure executes and updates all fields for a single customer or all customer records.

<b>ASSESSMENT CRITERIA</b> Criteria/Mark	<b>&lt; 40</b>	<b>40 - 49</b>	<b>50 - 59</b>	<b>60 – 69</b>	<b>70+</b>
<b>Generic Reference Data</b> <b>10%</b>	Little or no design to support generic reference data.	Partly supports Generic Reference Data.	Supports Generic Reference Data but no consideration for “soft” and “hard” deletes.	Supports Generic Reference Data and some consideration for “soft” and “hard” deletes.	Supports Generic Reference Data and “soft” and “hard” deletes.
<b>Association Extract</b> <b>5%</b>	View returns little or no association data.	View returns some association data but not both sides of the association.	View returns both sides of the association data but incorrect types.	View returns both sides of the association data but resultset is incomplete.	View returns full association dataset.
<b>Deleted Reference Data View</b> <b>5%</b>	View returns little or no deleted reference data.	View returns some deleted reference data but not all.	View returns deleted reference data but not all fields.	View returns deleted reference data but result set is incomplete.	View returns full deleted reference dataset.
<b>Technical Document (20%)</b>					
<b>Key Areas include:</b> <b>Overall Presentation, Description &amp; Functionality and detailed Design.</b>	Very Poor documentation. Description & functionality weak. Missing key parts (e.g. database schema). Poorly structured with spelling and syntax errors.	Poor documentation. Description and functionalities stated but lack clarity. Some key areas missing.	Adequate documentation with adequately stated details. Key areas are of reasonable standard.	Good documentation, all essential key areas covered. Description & functionalities clear.	Excellent documentation, Comprehensive design.

### **IMPORTANT NOTES:**

1. You must NOT use or hijack an existing solution that is available online.
2. You must NOT use or copy parts of a solution from another student.
3. Use the “Submit CA” Assignment link on Moodle to submit your Solution (Word Document with embedded .sql file).
4. **Late Submission Penalties:** Immediately after the submission deadline for an item of continuous assessment, a penalty will be applied per day or part thereof. For the purposes of these penalties, a day is defined as any day of the week, including weekends and public holidays when the College may be closed. The minimum possible mark for late submission is 0%. The number of marks deducted depends on the lateness of the submission and will be deducted according to the following scale:

Where an assessment is submitted between 1 and 14 days late 2 marks per day are deducted

An assessment submitted after the deadline but within 24 hours of the original deadline will attract the first day penalty, i.e. deduction of 2 marks

Where an assessment is more than 14 days late it is annotated at the discretion of the lecturer but no marks can be awarded.