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**Department of Creative Arts and Digital Information Bachelor of Information and Communication Technologies Graduate Diploma in Information and Communication Technologies**

**Database Administration BCDE214**

**Assignment One**

**Semester Two, 2023**

**Due date: 26 August 2023**

**Time: 5.00pm**

Instructions:

On page 2

**TOTAL MARKS:** **100**

Student Name/ID ...................................................................................................

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Submissions received late will be subject to a penalty of 10% of the student’s mark per working day.

This assignment is worth **25%** of the total marks for this course.

This paper has ***six*** (6) pages including the cover sheet.



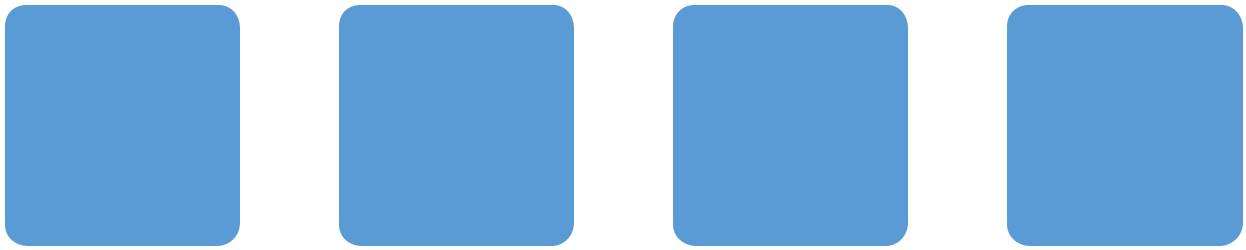
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**Instructions**

* There will be time set aside during normal class time during which students will be asked to demonstrate some aspects of their assignment.
* Microsoft Visio must be used to create the Entity Relationship diagram. The Visio file and the mySQL database file need to be **submitted via Moodle** before the due date.

**The Scenario**

Sysmex Hospital receives thousands of referrals a year for complex surgeries. These are currently managed by a team of manual data trackers who sit in a darkened room and maintain spreadsheets using manual methods which are labour intensive. The process is roughly as follows:



|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  | Staff |  |
| Referral | Staff Load | Doctors | continue to |  |
| into | Notified and | monitor until |  |
| Received |  |
| Spreadsheet | FSA date set | patient is |  |
|  |  |
|  |  |  | seen |  |



**Problem:** Referrals are manually logged in an excel spreadsheet (**ARA DATA Wait Lists Feb 2023.xlsx)** and are tracked on daily basis for changes using written memos and verbal orders. The management team of Sysmex Hospital have decided that all manual databases are to be moved into better solutions to allow automated population of the data and some reporting. In order to convince the Medical teams this will still be able to track patients adequately, a sample of referrals will be loaded in to a relational database and some reporting will be tested. For this purpose MySQL database has been selected and you have been commissioned to implement the project.

**Task:** Please place the data in the spreadsheet (**ARA DATA Wait Lists Feb 2023.xlsx**) into a relational database. The fields from existing spreadsheet is listed below:

|  |  |
| --- | --- |
| **Datapoint** | **Simple Definition** |
| Referral Date | Date the Referral was sent |
| Year-Month | Year and Month of Sending |
| Referred From | Source of Incoming Referral |
| Referred By | Person Sending Referral |
| NHI | Personal Identifier |
| Patient Name | Name specified by Patient |
| DOB | Date of Birth |
| Gender | Expressed Gender |
| Department | Hospital Department |
| Added to Waitlist |  |
| Date | Date referral was added to waitlist |
| Surgeon | Surgeon Name |
| FSA Date | First Specialist Appointment Date |
| Health Target |  |
| Eligible | If referral is eligible for Ministry of Health Reporting |

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In addition the Medical Staff would ideally like to have these fields:

**Patient Age at Referral**

**Days Waiting from Referral**

**Date**

**Assumptions:**

* We receive all referrals on the day they are sent
* Data has not been checked for quality but merely typed into the system
* The Ministry of Health expect everyone to be seen within 80 days
* Any reporting should exclude people who are not eligible for a health target

**Desired Outcomes**

A system that can be used to:

* Log contacts, including patient information, person who made contact information, worker information and actions taken. Note that actions taken may generate another contact.
* Store patient information, including who may have made contact on their behalf.
* Store worker information. This should also include when the worker was available for contact, as part of the reporting outcome may be requests for information as to why certain workers may not have had contacts directed to them.
* Export information to other systems in the health care sector, especially the palliative care sector. It is not known at this stage what format this data needs to be in.

**Constraints**

Constraints to the potential system include, but are not limited to the following:

* The patients are often rural and/or elderly. Digital literacy may not be high.
* Internet and cell phone coverage for the patients cannot be guaranteed.
* Workers may require extensive training with any IT systems.
* Due to privacy concerns, real data cannot be provided. This is a new system.

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**Produce (please refer to the detailed marking rubrics):**

1. A relational Schema (an extended ERD), using Visio, that includes entities, relationships, cardinality, attributes and the PK indicated.
2. A data dictionary of normalised tables (fields, data type, size, constraints)
3. A report on the GDPR compliant design process and the design issues encountered and how you chose to resolve these e.g. choice of entities, relationships, choice of keys, extent of normalisation, multi-valued or composite attributes etc. Comment on any optional, mandatory, recursive, weak, subtype/supertype and composite entities.
4. Maintain and provide evidence of version control throughout the assignment.
5. Tables and relationships created in mySQL – with sample data entered (please refer to **ARA DATA Wait Lists Feb 2023.xlsx** file) and *we would like to be able to answer the following queries.*
   * How many people have been referred for cardiothoracic?
   * What is the average time taken (in days) to see a Surgeon by Department?
   * Who has each Surgeon had on their list and how long have they been waiting or did they wait?
   * Assuming that all patients under 18 need to be seen by Paediatric Surgery, are there any patients who need to be reassigned?
   * What percentage of patient were seen within the target of 75 days by department?

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| **BCDE 214 - Assignment 1 - Marking Rubrics** | |  |
| **Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Iterations: 1 2** | | **3 Mark \_\_\_/100** |
| **1.** | **General Data Protection Regulation (GDPR)** | **[10 marks]** |

The General Data Protection Regulation (GDPR) is a new European Union (EU) data privacy law. It came into full effect on 25 May 2018.

The GDPR's main purpose is to create one coherent data protection framework across the EU, greatly improving data protection and privacy rights. It imposes a comprehensive set of principles and obligations which agencies working in or with the EU will need to be aware of and comply with.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | 1a | Use the resources provided in Moodle to learn more about the | |  |  |
|  |  | GDPR and how it could affect your Health Tech Database | | **[5 Marks]** |  |
|  |  | solution. |  |  |
|  | 1b | How well does your solution comply with data protection law? | | **[5 Marks]** |  |
| **2.** | **Design** | | **[15 marks]** | |  |

2a An Entity Relationship diagram of the system that you work on in an iteration. Use normalisation and other design practices.

*Deduct marks for:*

Attributes in wrong tables

Incorrect PKs

Incorrect FKs

Incorrect cardinalities

Incorrect entities

Relationships not shown

Not enough entities (two extra fields not created as requested)

Improper Normalisation

**3.** **Coding** **[40 Marks]**

3a Load data using code (no manual insert) and fix data errors **(10 marks)**

3b Database match data dictionary/ERD and if required extra fields to be

derived **(5 marks)**

3c Queries should be sensible, optimised and spitting desired output **(25 marks, 5 marks per query)** A demo or show and tell required.

**4.** **Back up- Restore, Security and Role Management** **[6 Marks]**

4a A report along with sample scripts covering the above topics in relation to database implementation. A demo or show and tell required.

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1. **Report on Design Issues and Version Control [12 + 3 = 15 marks]**

Comments expected on:

Data Cleansing

Choice of entities

Choice of attributes (simple, composite, multi-valued etc)

Choice of keys

Connectivity/Relationships

Use of composite/bridging entities

Extent of normalisation

Other “interesting” aspects of the design (e.g. supertype/subtype, cardinality – optional or mandatory, weak entity, recursive entity etc.)

Version Control – 3 marks

**6.** **Data Dictionary** **[5 marks]**

Deduct marks (-1 for each occurrence) for:

Poor/non-standard naming system

Incorrect/poor choice of data type

Incorrect/poor choice of size

Appropriate constraints not shown

PK/FK not indicated

|  |  |  |  |
| --- | --- | --- | --- |
| **7.** | **Performance Review** | | **[9 marks]** |
|  | 5a | Identifies what worked / didn’t work, and why, and what they | |
|  |  | would do differently next time. | **[3 Mark]** |
|  | 5b | Fully discusses own performance. | **[3 Mark]** |
|  | 5c | Expressed clearly and fluently, using specific examples. | **[3 Mark]** |

**Guide to preparing your report:**

**The topics in the Marking Rubrics on the previous page will be some of the content of your report. The report may also contain such items as screen snips of SQL code and the results from running SQL code.**

**The report must address the topics above in the order that they are listed and use the topic headings as they are written.**

**The report will be one of the items to be submitted to the drop box ALONG WITH other files such as the ERD and SQL script etc.**

**Failure to follow these guidelines will potentially cause marks to be lost.**

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