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Department of Computing

Bachelor of Information and Communication Technologies

Graduate Diploma in Information and Communication Technologies

Database Management Systems

BCPR203

Assignment One

Semester Two, 2017

Due date: 1 September 2017

Time: 5.00pm

Instructions:
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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 **20%** of the total marks for this course.
This paper has ***four*** (4) pages including the cover sheet.

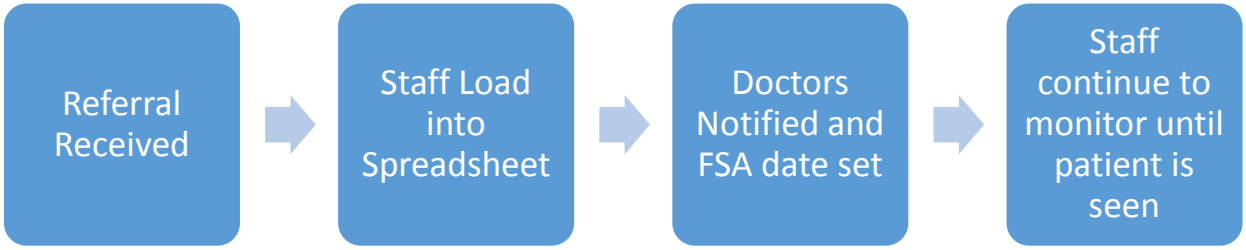
Ara
Institute of Canterbury
Ara rau, taumata rau

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:



Problem: Referrals are manually logged in an excel spreadsheet (**ARA DATA Wait Lists August 2017.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 August 2017.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

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

The tasks

Produce:

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 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 August 2017.xlsx** file) and *we would like to be able to answer the following queries*
    - How many people have been referred for surgery?
    - What is the average time taken 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 80 days by department?

Marking

Combined ERD and Relational Schema (40 marks)

Deduct marks (-*1 for each occurrence*) 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)

Data Dictionary (20 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

Report on Design Issues and Version Control (15 + 5 = 20 marks)

Comments expected on: (*2 marks each*)

- 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.) (*3 marks*)
- Version Control – 5 marks

MySQL database (20 marks)

- Load data and fixed data errors (5 marks)
- Database match data dictionary/ERD and 2 extra fields to be derived (5 marks)
- Queries are not sensible or not spitting desired output (10 marks, 2 marks per query)