IFB130 Database Management
Project - Part B

Project overview

This IFB130 project gives you an opportunity to apply the concepts and skills you acquire in the unit to a 'realistic' database design scenario and reflect on the data requirements of an organisation.

The submission is divided into two parts due at different times during the semester. These will cover:

A. Design of a database
B. Creation and use of databases

The tasks for Part B

For Assessment 2B you will be required to:

1. Create a database for the fictitious Warehouse database
2. Query the *Health Connect* Database

Weighting

Part B is worth 25 marks, for **25%** of the unit.

Groups

You can complete this assignment individually or in pairs. You do not have to work in the same pairs as you did for Part A.

If you choose to work in a pair, only one student should submit the assignment. Please provide the name and student number of the person you worked with in the README.txt file. No consideration will be given to students who claim they did more work in their pair than the other student because this assignment can be done individually.

Doing the assignment in undeclared groups, or groups larger than two students, will be treated as plagiarism. Pairs that work together and then split due to difficulties must not submit any of the same work, or it will be treated as plagiarism.

Due date

Week 11: Monday 8 October at 11.59 pm

Submission

You must submit 3 files in a ZIP file using the submission link in Blackboard:

1. SQL script (a text file with the file extension changed to sql) containing your solution to task 1.
2. SQL script containing your solutions for tasks 2, 3, 4 and 5 (do not upload the database import script as part of your solution).
3. README.txt containing your full name, student number (and the name and student number of your partner if working in pairs) and a list of any queries you have attempted but were not able to successfully run in Workbench.

If you do not follow these submission guidelines you will lose a mark. Scripts in different file types will not be accepted.

Late submission

Assessment work submitted after the due date will be marked only with an approved extension (MOPP E/6.8.2). Assessment work submitted after the due date without an approved extension or, where an extension has been granted, after the extended due date, will not be marked and a grade of 1 or 0% will be awarded against the assessment item. The unit outline sets out the requirements surrounding extensions (including for disabilities), penalties for late submissions and appeals.

Assessment 2B tasks

For this assessment, you will:

1. Build a script that will create a database for a given relational schema (Week 6)
2. Provide the SQL commands needed to retrieve the required data using assessment 2a extended schema (Week 7 to 9)
3. Provide the commands to modify (INSERT, UPDATE & DELETE) the data using assessment 2a extended schema (Week 6)
4. Provide the commands needed to create appropriate indexes and views (Week 6 to 9)
5. Provide advice on the basic security measures that should be implemented (Week 10)

Task 1 [6 marks] Warehouse Database

A SQL script is a set of SQL commands saved as a SQL file. If you are already running MySQL, you can execute a SQL script file using the source command or you can import it in Workbench.

Write an SQL script that builds a database to match the relational model provided to you. These SQL statements in the script must be provided in the correct order.
Marks will be awarded for the following:

1. Creating the database (1 mark)
2. Successfully creating new tables (1 mark)
3. Including all attributes (1 mark)
4. Including constraints (1 mark)
5. Correctly creating Primary Keys (1 mark)
6. Correctly creating Foreign Keys (1 mark)

For task 1, you are required to create a database for the fictitious online book store, *Oktomook*. This store operates from many warehouse locations. The database is based on the model below:

Warehouse relational model

Warehouse (warehouseNumber, warehouseName, streetNumber, streetName, city, suburb, state, postcode, warehouseHeadName, numberEmployees)

Publisher (publisherCode, publisherName, publisherCity, publisherState, publisherEmail)

Author (authorNumber, authorName, authorEmail)

Item (itemCode, itemTitle, publisherCode, itemType, stockPrice, ISBN)

ItemWriters (itemCode, authorNumber, writerSequenceNumber)

Inventory (itemCode, warehouseNumber, unitsOnHand)

FOREIGN KEYS

- Item(publisherCode) is dependent on Publisher(publisherCode)
- ItemWriters(authorNumber) is depending on Author(authorNumber)
- ItemWriters(itemCode) is dependent on Item(itemCode)
- Inventory(itemCode) is depending on Item(itemCode)
- Inventory(warehouseNumber) is dependent on Warehouse(warehouseNumber)

OTHER CONSTRAINTS

- Warehouses are located in the following cities: Sydney, Brisbane, Melbourne
- ISBN must be a 13-digit number and may begin with a zero
- The publisher name and item title are both mandatory
- The default number of employees quantity is 1
- itemCode may be a combination of letters and number.
- The possible item types are: paperback, eBook, other

Task 2 [11 marks] using the Health Connect database

For task 2, we have provided you with the creation script for the Health Connect database. You must run this script in MySQL Workbench and use this database to extract the necessary information.

The script is based on the following schematic:

Health Connect relational model

Users (nickname, firstName, surname, birthYear, city, suburb, job, TV, videoID, mentorNickname)

Posts (postID, datetime, content)

PostAuthors (nickname, postID)

PostComments (nickname, postID, datetime, content)

Video (videoID, title, description, duration, filetype)

HealthPractitioners (healthPracID, firstName, surname, streetNumber, street, suburb, city, postcode, type)

PhoneNumber (phoneNumber, healthPracID)

Illness (illnessID, name, description)

TreatmentRecords (nickname, healthPracID, illnessID, dateStarted, degree)

FOREIGN KEYS

- PostAuthors (nickname) is dependent on Users (nickname)
- PostComments (nickname) is dependent on Users (nickname)
- PostAuthors (postID) is dependent on Posts (postID)
- PostComments (postID) is dependent on Posts (postID)
- Users (videoID) is dependent on Video (videoID)
- TreatmentRecords (healthPracID) is dependent on HealthPractitioners (healthPracID)
- PhoneNumber (healthPracID) is dependent on HealthPractitioners (healthPracID)
- TreatmentRecords (illnessID) is dependent on Illness (illnessID)

OTHER CONSTRAINTS

- Video (filtype) domain is [AVI, MOV, FLV, MP4, WMV]
- HealthPractitioners (type) domain is [Doctor, Physio, Dietician]
- TreatmentRecords (degree) domain is [1-5]
- Health Practitioners may have up to three phone numbers

Query 1 (1 mark)

Write a query to list the full names, (i.e. first name and last name combined), nickname and job of users who live in Stafford Heights or Stafford. Note: you can assume these are the only suburbs starting with 'Stafford'.

Query 2 (1 mark)

Write a query to list the nicknames of all users who have a mentor, together with the nickname of their mentor. Sort the result in alphabetical order of user surname.

Query 3 (2 marks)

Write a query to count how many users each health practitioner in the database treats. In your result-set, include the health practitioners ID, first name, surname and the number of users they treat.

Query 4 (2 marks)
Write a query that lists the first name and city of all users that haven’t made any posts or comments.

Query 5 (2 marks)
Write a query that will produce some statistics about each illness to report to the Health Connect exec team. Your result-set should include the following:

- the illness ID
- the illness name
- the number of users that have reported the illness
- the first time someone reported the illness,
- the most recent report of the illness and
- the average degree that patients experience the illness.

Query 6 (3 marks)
Write a query to produce the number of comments and posts each user has made. Your result set should include the user nickname and their total comments and posts. Only show users who have made 1 or more comments or posts.

Task 3 [3 marks]

Insert (1 mark)
Write an INSERT command to insert a new User into the Health Connect system. The users nickname is ‘stormy’, their firstname is ‘Sam’, surname is ‘Rodgers’, they were born in ‘1982’ and have not uploaded a video nor do they have a mentor.

Delete (1 marks)
Write a DELETE command to remove all rows from the phone number table where the phone number starts with ‘07’.

Update (1 mark)
Write an UPDATE comment to change the address of all Health Practitioners with the last name ‘Smith’ who work at ‘180 Zelda Street, Linkburb’ to ’72 Evergreen Terrace, Springfield’.

Task 4 [3 marks]

Create Index (1 mark)

Currently the database only contains a small number of records. However, the data contained within it is expected to grow significantly in the future. Creating indexes on commonly searched columns is a way performance issues can be minimized.

Write a command to create an index on postID of the Posts table.

Create view – 2 marks

Write a command to create a view to list the nickname, firstname, surname and birthyear of any users that haven’t listed any illness.

Task 5 [2 marks]

Health Connect have two employees, Wayne and Jake, to work with the MySQL database. Working as MySQL database administrator, provide the commands required to grant or revoke access so the following security requirements are met:

A. User Wayne must be able to add records to the USERS table (0.5 Marks)
B. User Wayne must be able to remove records from the USERS table (0.5 Marks)
C. User Jake is no longer allowed to add data to the USERS table (0.5 Marks)
D. User Jake is no longer allowed to delete records from the USERS table (0.5 Marks)

Assume usernames of employees Wayne and Jake are *wayne* and *jake* respectively.