

MOUNT ROYAL UNIVERSITY

COMP 2521 002

DATA MODELING AND QUERY LANGUAGES

Assignment Three

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1 Introduction

The DDL for the assignment SQL is summarized in this top-level chunk. The tables are created in the order the referenced chunks are named. The parental chunk has the same name as the table in the database, but child chunks should have descriptive names (if any child chunks exist).

The SQL server used is MariaDB. The $\langle \text{MariaDB version} \rangle$ used is contained in the chunk just referenced.

Occasionally, throughout this document, chunk names may be repeated in SQL comments to ensure that the tangled SQL is readable without the literate document.

$\langle \text{MariaDB version} \rangle \equiv$
 - 10.3.39-MariaDB; as of 2023-12-02T23:11PM on macomydb.mtroyal.ca
 SELECT VERSION();

Overall, the SQL script to create the database is outlined.

$\langle A3.sql \rangle \equiv$
 $\langle \text{DDL: tables} \rangle$

The file is not too complex.

2 DDL

$\langle \text{DDL: tables} \rangle \equiv$
 $\langle \text{USER} \rangle$
 $\langle \text{BOOK} \rangle$
 $\langle \text{AUTHOR} \rangle$
 $\langle \text{BOOKAUTHOR} \rangle$
 $\langle \text{READBOOK} \rangle$
 $\langle \text{WARNINGS table} \rangle$

2.1 The USER table, or why email address validation is difficult for amateurs

$\langle \text{USER} \rangle \equiv$
 CREATE TABLE USER(PRIMARY KEY Email, DateAdded, NickName, Profile);
 - Ensure email addresses are valid
 $\langle \text{Ensure email addresses are valid} \rangle$

From the perspective of a software engineer, almost any string is a valid international email address. ASCII-only email addresses are also quite complex! A great video of a presentation on the topic is available here on YouTube (the presentation was given by Dylan Beattie at NDC { Oslo }). More technical information is contained in this archived document from the Universal Acceptance Steering Group of ICANN.

In some cases it may be useful to assign both an EAI and a legacy address for a mailbox. (See Downgrading, below.) In some cases there may be a straightforward transliteration, such as @domain to boris@domain or @domain to liwei@domain. In other cases, there may be no natural way to transliterate, and the two names may have no obvious connection.

Client-side and server-side validation of email addresses should be used; prevent malicious actors. Assuming that client-side validation of email addresses has been implemented properly, and that server-side validation has also occurred, what remains is to insert the email address into the database and check that it has an @ sign in the string, at *minimum* (or *maximum*, depending on personal engineering perspective).

⟨Ensure email addresses are valid⟩≡
⟨Define a server function to be triggered whenever a new user is created⟩
⟨Whenever a user is created, call the defined function to validate email addresses⟩

Performing the check is simple; query all user email addresses, and any that are invalid should be logged to a *⟨WARNINGS table⟩* for database administrator review.

⟨Define a server function to be triggered whenever a new user is created⟩≡
⟨Whenever a user is created, call the defined function to validate email addresses⟩≡
⟨WARNINGS table⟩≡

3 TODO

⟨BOOK⟩≡
⟨AUTHOR⟩≡

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A3.nw 3

$\langle BOOKAUTHOR \rangle \equiv$

$\langle READBOOK \rangle \equiv$