CMPUT 291 Assignment 1 (Winter 2023)

Rubric:

(50 marks in total) Part I - ER Modeling
- (50 marks) solution (as in studentName-A1P1.pdf)
  . Necessary entities and attributes are present.
  . Necessary relationships and constraints are present.
  . Deductions for notation inconsistencies
  . Deductions for redundant entities, relationships and attributes
  . comments can be provided (in comments.txt)

(50 marks in total) Part II - Mapping
- Clearly showing what is mapped to a table (as in studentName-A1P2-Mapping.pdf)
- All entities, relationships and constraints are correctly depicted in the queries (as in studentName-A1P2-Queries.txt)
- Deductions for redundant tables, attributes and constraints

Other general deductions
- for missing the file readme.txt or missing necessary information in that file
- for doing ER in hand-writing or not typing the mapping or comments
- for not following the submission instructions

Introduction

The goal of this assignment is to reinforce the concepts of database design using Entity-Relationship (ER) model and mapping an ER model into a relational model. This assignment has two parts.

Part I - Modeling

You are building a database for a comic book store customer management system. Given the database specification below, your job is to turn the specification into an ER diagram. Your notation must be consistent with the notation used in our lecture notes.

You can use all constructs and notations discussed in our lecture notes and nothing else (i.e., even notations used in the textbooks but not in our lectures **cannot** be used).

Your ER diagram should capture all the information and constraints in the specification but, at the same time, be minimal. It means that redundant entities, relationships, attributes and constraints should be avoided.

You may use any drawing tool of your choice (for example, Dia, diagrams.net, Lucidchart, etc.) to draw your ER diagram. Hand drawings will not be accepted.

Database Specification

The database keeps information about comic books, customers, orders, inventory and reviews.

First, the database should include information about all comic books available at the store. In addition to a unique id, each book has a title, publisher, issue number, cover price and one or more authors who authored the comic. You can assume the ids of books and authors are unique. Each series of books has a name and consists of one or more comic books (also referred to as issues). The comics in a series are ordered.

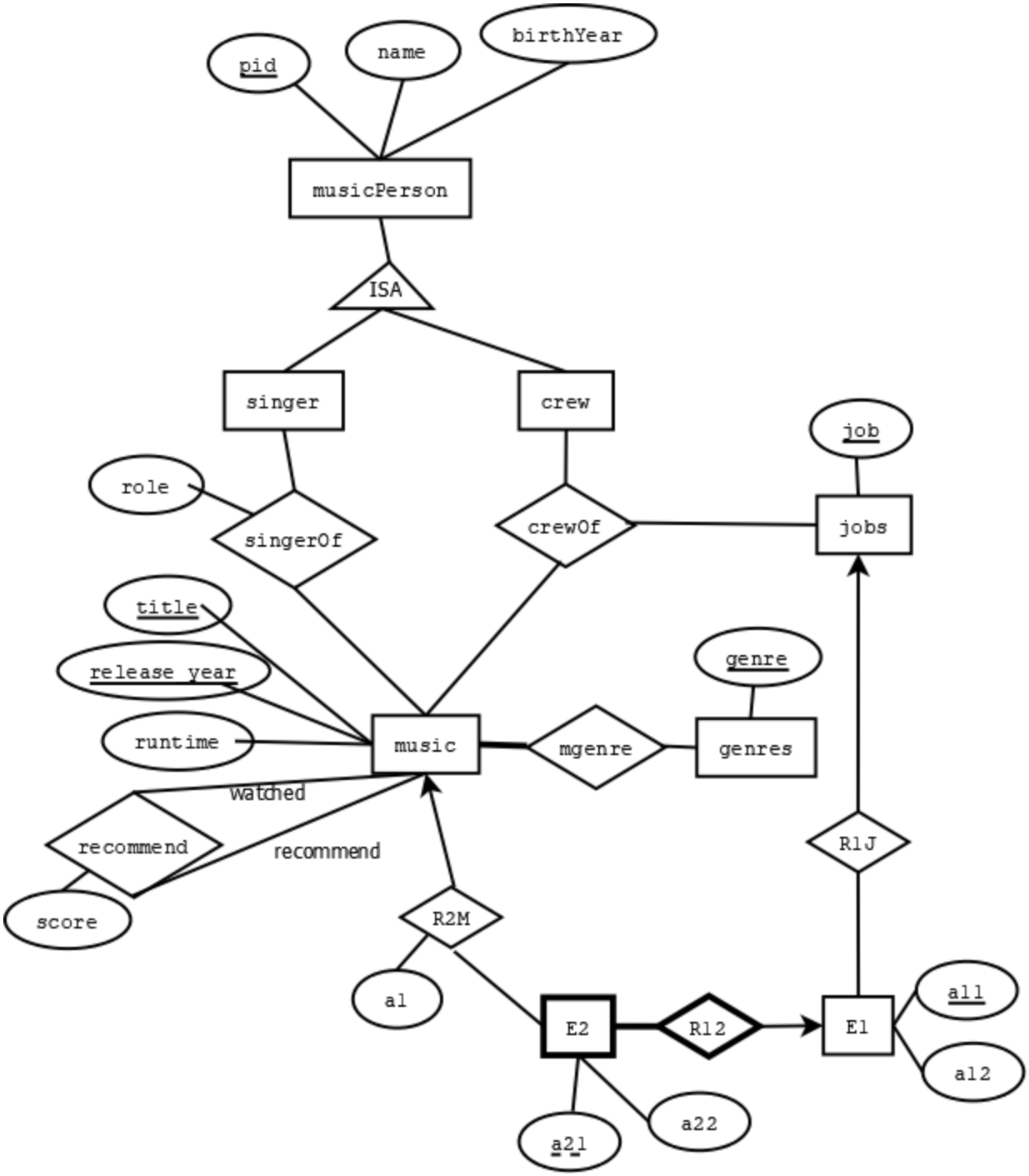
The database must keep track of the store's inventory of comics, including the number of copies of each book in stock and the location of those copies in the store. It is always possible to find all copies of the same book on a single shelf.

Each customer has a customer id and a full name. Customers can make orders, and each order has a date and includes one or more comic books. Each order belongs to a single customer. Orders must be kept on file even when a customer's data is not available anymore.

Customers can review comic books. Each review can be made public or private. Each review has a date, number of stars (1 to 5), title and detailed description. The system must ensure that the customer really bought the comic book they reviewed, so each review must have a corresponding order. After a new review is added, an average rating for the reviewed comic book is recalculated and stored in the database.

Part II - Mapping

Map the following ER diagram into relational tables using the rules discussed in class. Give the complete `CREATE TABLE` commands for each necessary table, including attribute names, their domains/types and all possible constraints. Use your common sense to choose a domain for each attribute.



Deliverables

Submit a single tar file for your entire assignment named studentName-A1.tgz. The submitted tar file is expected to have the following pieces:

- A file named **studentName-A1P1.pdf**. This file is the PDF of the ER diagram prepared by the student for Part I.
- A file named **studentName-A1P2-Queries.txt**. This file is a text file that has the solution for Part II. The solution includes the relations (CREATE TABLE statements) obtained when mapping the given ER-model in Part II to the Relational model.
- A file named **readme.txt**. This is a text file that lists the names and ccids of anyone you collaborated with (as much as it is allowed within the course policy) and a line saying that you did not collaborate with anyone else. A submission without this file or with missing information can lose 5% or more of the total mark. This is also the place to acknowledge the use of any source of information besides textbooks and/or class notes.
- A file named **studentName-A1P2-Mapping.pdf** clearly describing what is mapped to a table in Part 2. For example, you may have the ER for Part 2 and show in drawing how the elements are grouped to form a table as done in class.

The tar file can be created under Linux (lab machines) and MacOS using the command

```
tar -czf a1.tgz   <all-the-files-to-be-included>
```

where <all-the-files-to-be-included> is replaced with the names of all files you are including in your submission.

Your ER diagrams should be produced with the diagramming tool such as dia or draw.io (here is a link to Windows and Mac versions of dia- use it at your own risk) and exported in PDF. You must use the same notation used in the course lectures. If you are making any assumptions in your modeling or mapping, state them clearly in your readme.txt; note that your assumptions cannot violate the specification given here and any possible clarification posted later on top of this page or the course forums.

Submission

Submit the tar file of your solution. Each submission will override the previous submission, so it is not advised to submit in the last few mins to prevent any mishaps with the upload. Make sure that the submission is not corrupt by downloading and checking it after the submission.