

Assignment 2: Relational Database Design

For this assignment, you will design a database for a Python packaging index. Below are the requirements:

- A Python Package has a package name, package version, description, url, zip_safe flag (Boolean), creation date and a minimum and maximum Python version which it is compatible with.
- An Author has a username, email, first name and last name.
- A License has a License ID, a short name, optionally a full name, and a license text describing the terms of the license (this may be several paragraphs long).
- Several authors can contribute to multiple Python packages (i.e. one package may have multiple authors, and one author may contribute to multiple packages).
- Similarly, multiple authors can write one license, and one author can contribute to writing multiple licenses.
- Each Python package is released under the terms of a single license.
- Each Python package may have multiple requirements (other packages available within the index which it depends on) and be required by multiple other packages. Two packages cannot require each-other.

Here is a link to the readthedocs Python packaging conventions, which may give you more insight into some of the semantics: <https://python-packaging.readthedocs.io/en/latest/dependencies.html>

Complete the following tasks:

1. **(10 marks)** Go to <https://www.draw.io> and create a new diagram. Create an ER Diagram for the Python packaging index outlined above. Remember to identify attributes for each entity and relationship (where necessary), the primary key and the cardinality of the relationships. Export your diagram as a .pdf for submission.
2. **(6 marks)** Create a new <https://www.draw.io> diagram. Create a relational diagram which is a mapping from your ER Diagram. Remember to identify foreign key relationships between your tables. Export your diagram as a .pdf for submission.
3. **(6 marks)** Create a document describing at least 2 constraints per table. Give an example of a task that would violate each constraint. For more information about constraints, refer to [Chapter 9 of Watt's Database Design](#).

(See next page for task 4)

(Tasks, continued)

4. **(2 marks)** Identify which normal form each table is in. Justify your answer. If a table is not in 1NF or 2NF, what could be done to make the table at least 2NF?

You should submit 3 files as part of your D2L Dropbox submission:

- A PDF (or other image format in which all text is readable) of your ERD from Question 1
- A PDF (or other image format in which all text is readable) of your Relational model from Question 2
- A PDF containing your answers to Questions 3 and 4