Normalization

NOTE: No need to normalize all tables, because many of them are already normalized.
Also if the table has only two attributes then it is in BCNF already.

1) 1NF - All tables already in 1NF, cause no repeating groups in my columns.

2) 2NF - I'm gonna normalize the Student table.

Student

student_id	name	address	age	sex	gpa

here GPA is non-prime* attribute, also GPA and 'name' are dependent from s_id. Lemme break it into two tables.

student_id	name	address	age	sex

name	gpa

Now we have access to the GPA of a student by using his/her name.

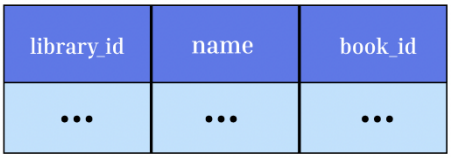
[s_id] ⇒ prime* attribute
[address, sex, gpa] ⇒ non-prime* attribute

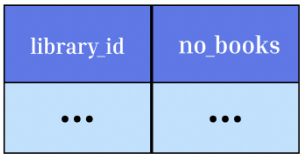
3) 3NF - Library Table.

Library

name	no_books	library_id	book_id
...	...	...	...

{book_id → lib_id, lib_id → no_books, lib_id → name}
{book_id, lib_id} ⇒ superkeys
{book_id} ⇒ key

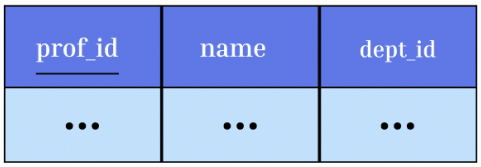


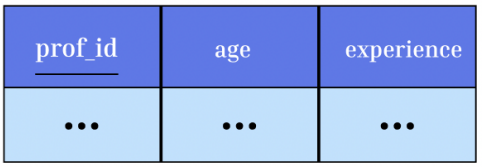


[lib_id] ⇒ prime attribute
[no_books] ⇒ non-prime attribute

4) BCNF - Professor Table;

{prof_id → name}
{name → age, name → experience}
{prof_id, name} ⇒ superkey
{prof_id} ⇒ key
here name depend form prof_id then Age and Experience they're depend from name which violates the BCNF. let's break it:





[profi_id] ⇒ non-prime* attribute
[age, experience] ⇒ prime* attribute

prime - a prime attribute is an attribute that is part of any candidate key.It can also be used to uniquely identify a tuple in the schema.
non-prime - A non-prime attribute is one that is not part of one of the candidate keys. By itself it cannot define any other columns(attribute)