LIBRARY DATABASE

# Introduction

The purpose of this project is creating database using SQL and designing a user interface html page to access these SQL retrieval statements.

Firstly, I used python and the flask library to create proper and simple html page. After that, I coded the mysql statements to create local database. The library has following operations:

* Insertion of book
* Deletion of book
* Showing all the books
* Showing all the books according to wanted field property
* Insertion of user
* Deletion of user
* Borrowing books for two weeks
* Showing the user’s borrowed books number and their isbn codes.

# Relation Definitions

book( isbn, title, author, year)

user( tc, name, surname, hold)

borrow( isbn, tc, due)

### book

isbn -> isbn title author year. So the isbn is the only key and the only determinant. Nonkey values are not functionally dependant on each other. Because the determinant is also the key, the book relation is in BCNF.

### user

tc -> tc name surname hold. So the tc is the only key and the only determinant. Nonley values are not functionally dependant on each other. Because the determinant is also the key, the user relation is in BCNF.

### borrow

isbn -> isbn tc due. SO the isbn is the only key and the only determinant. Nonkey values are not functionally dependant on each other. Because the determinant is also the key, the borrow relation is in BCNF.

# SQL DML

To create the local database some mysql statements should be written. They are showed below.

CREATE DATABASE project;

USE project

CREATE TABLE book(

isbn INT PRIMARY KEY,

title VARCHHAR(20),

author VARCHAR(20),

year INT);

CREATE TABLE user(

tc INT PRIMARY KEY,

name VARCHAR(20),

surname VARCHAR(20),

hold INT);

CREATE TABLE borrow(

isbn INT PRIMARY KEY,

tc INT,

due DATE);

DELIMETER $$

CREATE PROCEDURE increment(tc\_var INT)

BEGIN

UPDATE user

SET hold = hold + 1

WHERE tc = tc\_var;

END$$

CREATE PROCEDURE decrement(tc\_var INT)

BEGIN

UPDATE user

SET hold = hold - 1

WHERE tc = tc\_var;

END$$

CREATE PROCEDURE delete\_borrow(isbn\_var INT)

BEGIN

DELETE FROM borrow

WHERE isbn = isbn\_var;

END$$

CREATE PROCEDURE delete\_all\_borrowed(tc\_var INT)

BEGIN

DELETE FROM borrow

WHERE tc = tc\_var

END$$

DELIMITER ;

# Constraints

* The user can borrow at most 8 books.
* One book can be borrowed from at most one user.
* The due date is 2 weeks later from borrow date.
* System should be able to search books according to different fields.

# Inputs & Outputs

A screenshot of a cell phone

Description automatically generatedmain page

A screenshot of a cell phone

Description automatically generatedadd book

A screenshot of a cell phone

Description automatically generatedshow books

A screenshot of a cell phone

Description automatically generateddelete book

A screenshot of a cell phone

Description automatically generatedafter delete book

A screenshot of a cell phone

Description automatically generatedadd user

A screenshot of a cell phone

Description automatically generatedshow users

A screenshot of a cell phone

Description automatically generateddelete user

A screenshot of a cell phone

Description automatically generatedafter delete user

A screenshot of a cell phone

Description automatically generatedmain search page

A screenshot of a cell phone

Description automatically generatedsearch isbn

A screenshot of a cell phone

Description automatically generatedafter search isbn

A screenshot of a cell phone

Description automatically generatedsearch title

A screenshot of a cell phone

Description automatically generatedafter search title

A screenshot of a cell phone

Description automatically generatedsearch author

A screenshot of a cell phone

Description automatically generatedafter search author

A screenshot of a cell phone

Description automatically generatedsearch year

A screenshot of a cell phone

Description automatically generatedafter search year

A screenshot of a cell phone

Description automatically generatedborrow book

A screenshot of a cell phone

Description automatically generatedsearch borrowed books

A screenshot of a cell phone

Description automatically generatedafter search borrowed books

# Conclusion

To organize systems and data flows we always need efficient and appropriate database manipulation systems. SQL really helps us in this point. But, I could make more user friendly system that checks every movement of the user to get rid of the problems may occur. When we consider the project purpose, bothering with the small details to improve the UI is unnecessary.