# CMPE 321

# INTRODUCTION TO DATABASE SYSTEMS

## SUMMER 2020

## HOMEWORK 3

## LIBRARY

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# 1 INTRODUCTION

In this project we were expected to create a small library database with a simple web based user interface. There is only one borrowable element which is called book. Books has 5 field such as book_id, isbn, title, author,and is_borrowed. There are one more table which is called Borrow List. It has 3 fields book_id, borrower_id and due_date. There are some functionalities in my system such as insert book, delete book, search book for various fields, borrow book, and search over borrowed books. There are three pages in my system. Starting page is main page which we can see borrowed books list, library and borrower buttons. User can make search on borrowed books according to identity number of the borrower and title of the book. If user click library button, it pass on library page which have books list, insert book functionality and delete book functionality. User can make search operation over books in this page. Other than these pages there are one last page which is called borrower page. Borrower page has book list and search operations too. It also has borrow book functionality.

# 2 RELATIN DEFINITIONS

1NF as there is no multi valued attribute. 2NF becauseit has no partial dependency. 3NF because there is no transitive dependency for non-prime attributes.

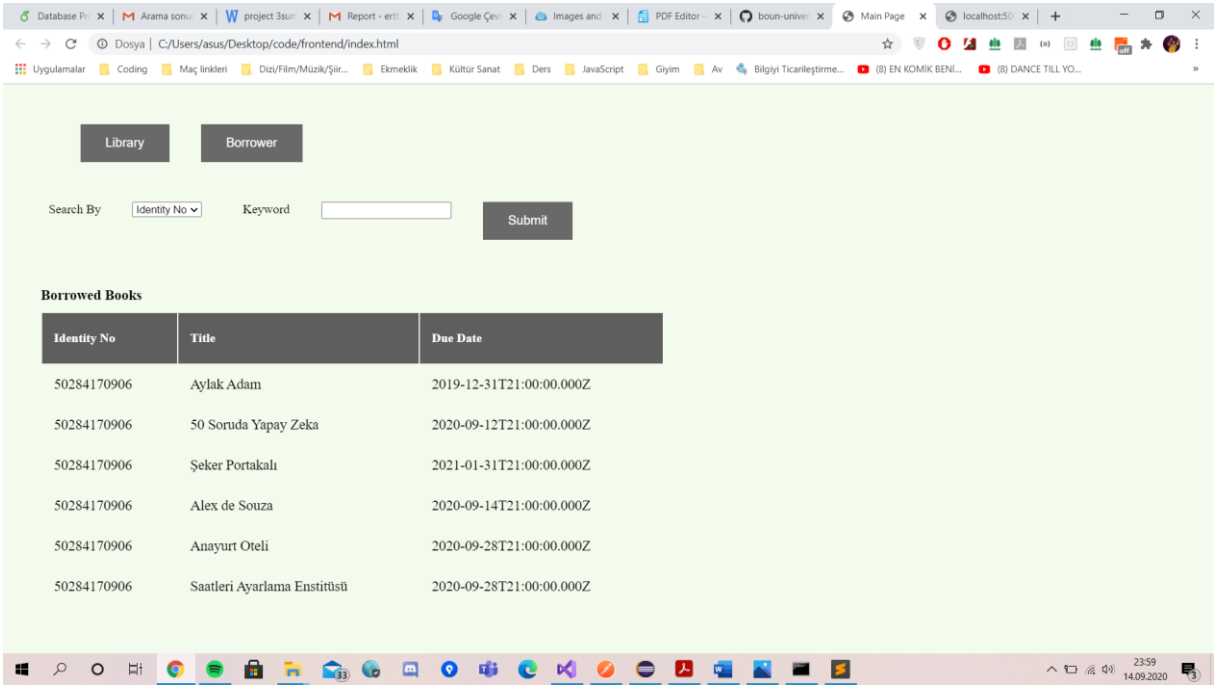
# 3 SQL DML

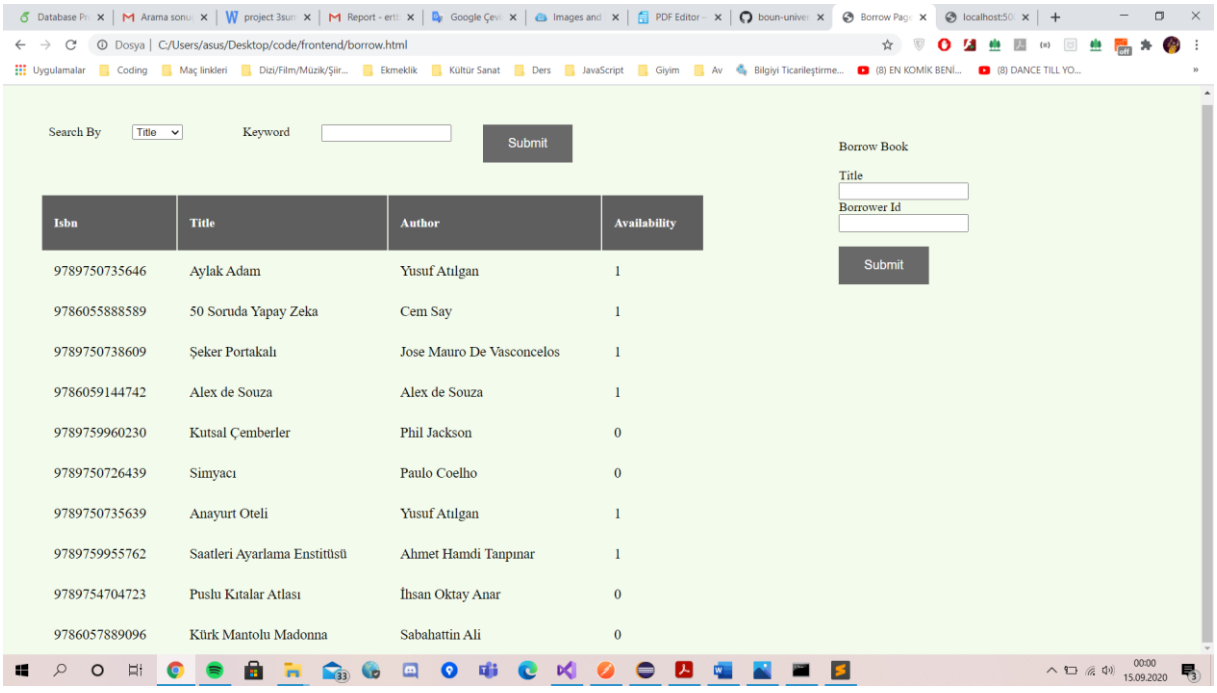
```
createTables: {
    book: "CREATE TABLE book (book_id INT AUTO_INCREMENT,isbn VARCHAR(13) NOT NULL,title VARCHAR(80) NOT NULL,author VARCHAR(80) NOT NULL,is_borrowed TINYINT(1) DEFAULT(0),PRIMARY KEY(book_id))",
    borrow_list: "CREATE TABLE borrow_list(book_id INT,borrower_id VARCHAR(11), due_date DATE,PRIMARY KEY(book_id),FOREIGN KEY(book_id) REFERENCES book(book_id) ON DELETE CASCADE)",

},
dropTables: {
    book: "DROP TABLE book",
    borrow_list: "DROP TABLE borrow_list",

},
get: {
    books: () => {
        return 'SELECT * FROM book';
    },
    booksByTitle: (title) => {
        return `SELECT * FROM book WHERE title = "${title}"`;
    },
    booksByIsbn: (isbn) => {
        return `SELECT * FROM book WHERE isbn = "${isbn}"`;
    },
    booksByAuthor: (authorName) => {
        return `SELECT * FROM book WHERE author = "${authorName}"`;
    },
    borrowedBooks: () => {
        return 'SELECT borrow_list.borrower_id,borrow_list.due_date, book.title FROM borrow_list JOIN book ON borrow_list.book_id = book.book_id ORDER BY borrow_list.borrower_id DESC';
    },

    borrowedBooksByBorrower: (ID) => {
        return 'SELECT borrow_list.borrower_id,borrow_list.due_date, book.title FROM borrow_list JOIN book ON borrow_list.book_id = book.book_id WHERE borrower_id = "${ID}"';
    },
    borrowedBooksByTitle: (title) => {
        return 'SELECT borrow_list.borrower_id,borrow_list.due_date, book.title FROM borrow_list JOIN book ON borrow_list.book_id = book.book_id WHERE title = ${title} ORDER BY borrow_list.borrower_id DESC';
    },


},
add: {
    book: (isbn, title, author) => {
        return `INSERT INTO book(isbn,title,author,is_borrowed) VALUES("${isbn}","${title}","${author}",0)`
    },
    borrow: (book_id, id, due_date) => {
        return `INSERT INTO borrow_list VALUES(${book_id}, "${id}", "${due_date}")`
    },

},
update: {
    status: (title) => {
        return `UPDATE book SET is_borrowed = 1 WHERE title = "${title}"`
    },

},

delete: {
    book: (title) => {

        return `DELETE FROM book WHERE book.title = "${title}"`;
    },
    borrow: (bookId) => {

        return `DELETE FROM borrow_list WHERE borrow_list.book_id = ${bookId}`;
    }

},
count: {
    borrowedBook: (id) => {

        return `SELECT COUNT(*) FROM borrow_list WHERE borrower_id = "${id}"`;
    },

},
```

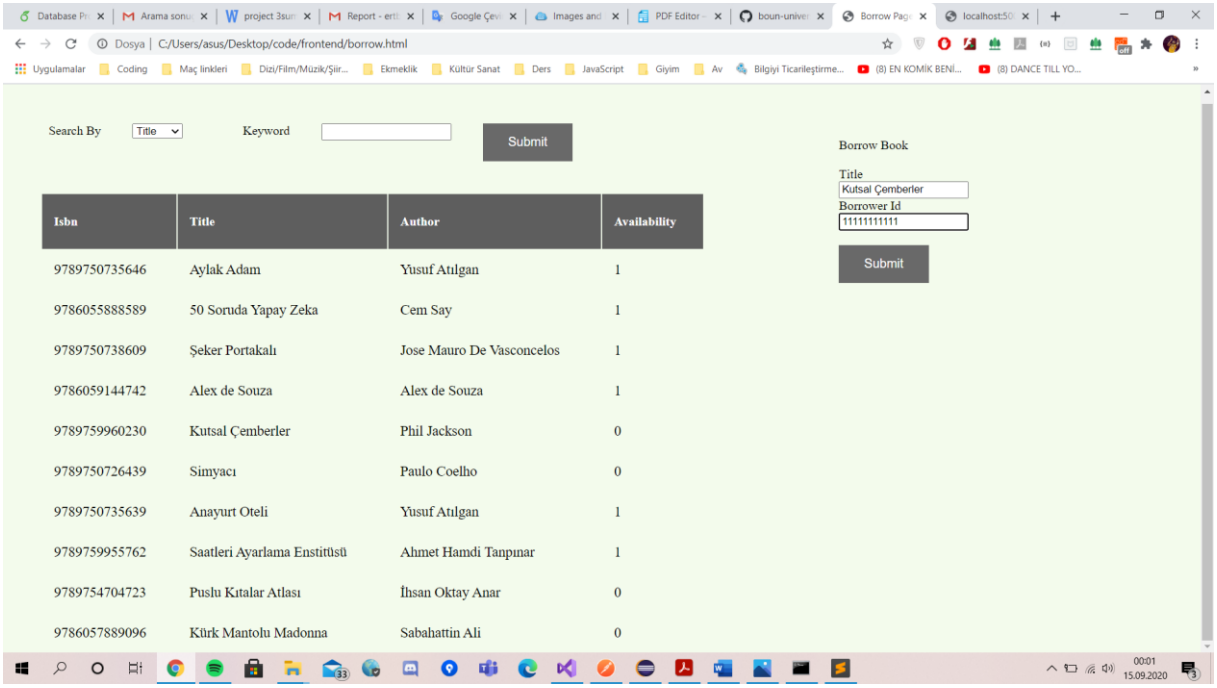
# 4 CONSTRAINTS

Book isbn can be maximum 13 character. Book title can be maximum 80 character. Book author can be maximum 80 character. Book is_borrowed can be 0 or 1.

# 5 INPUT AND OUTPUT

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9786055888589 50 Soruda Yapay Zeka Cem Say 1
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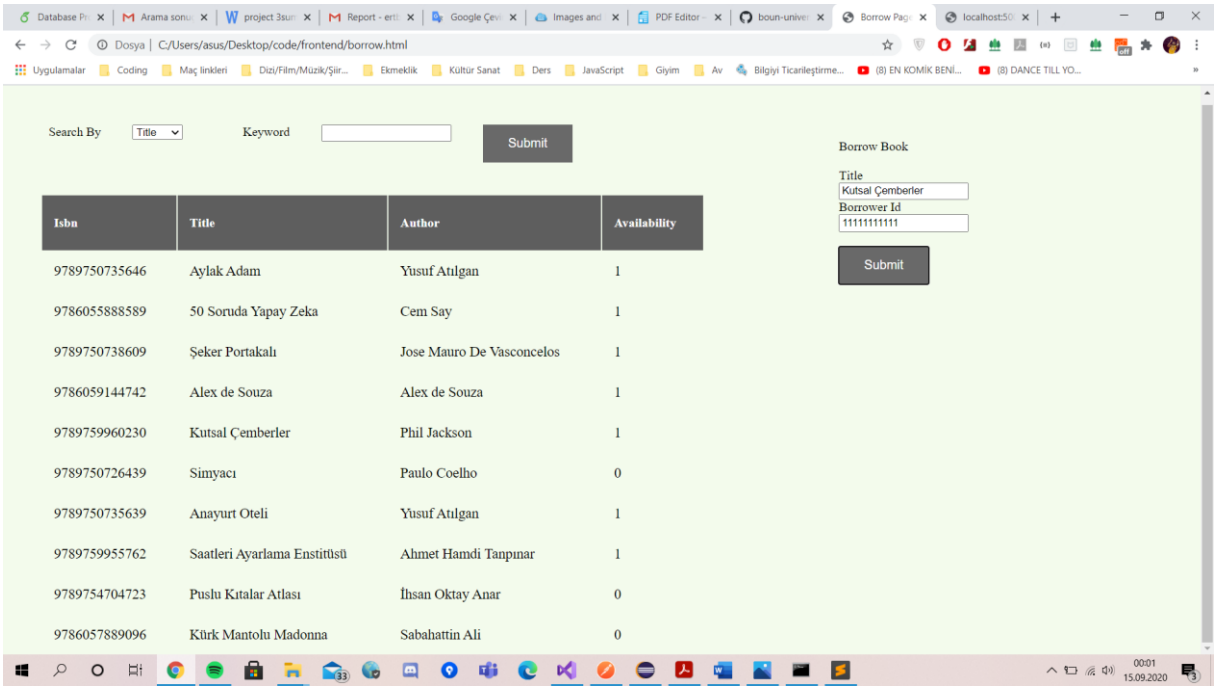
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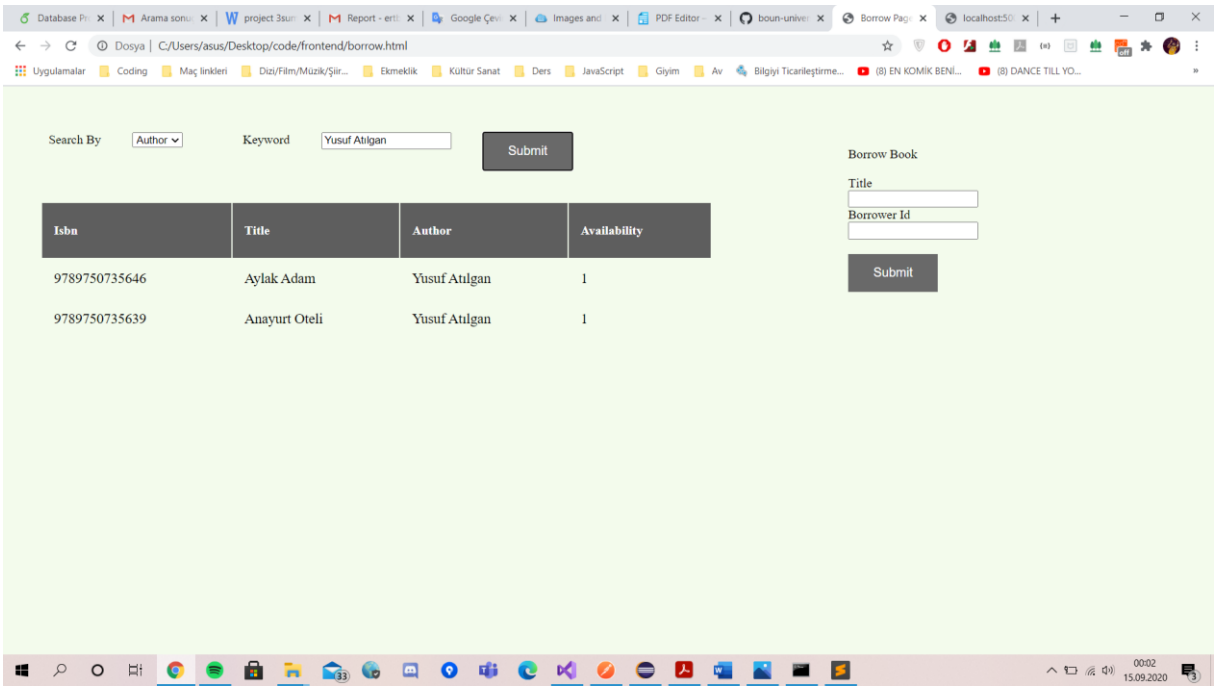
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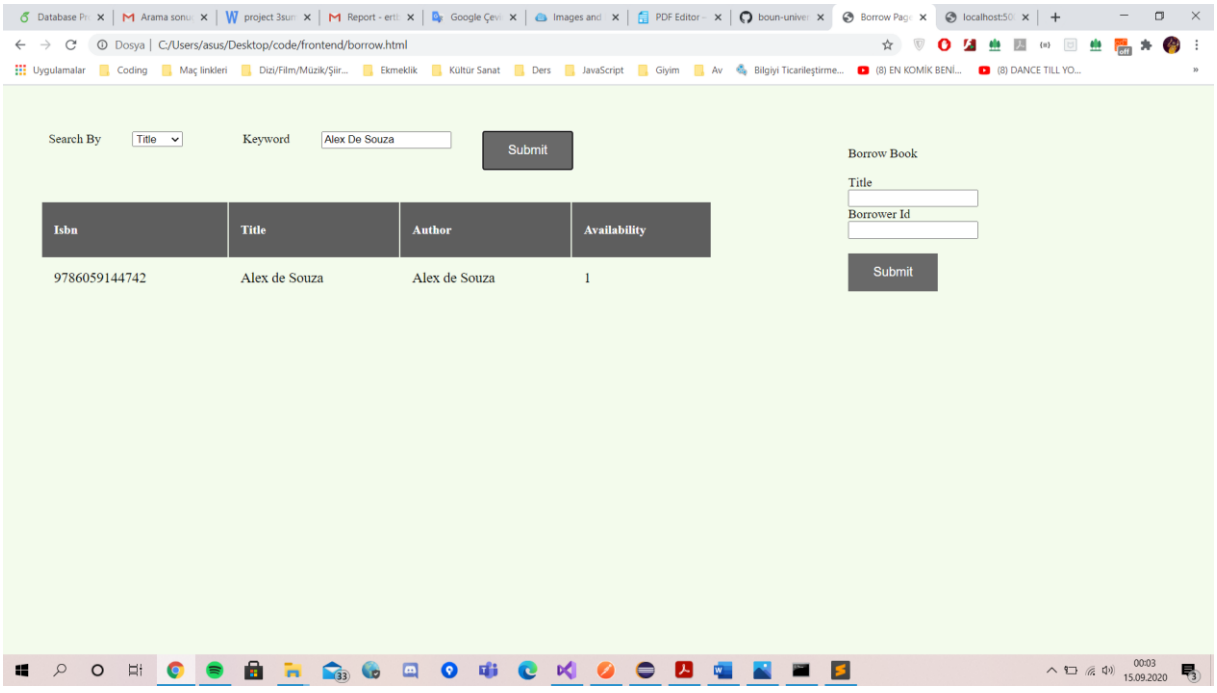
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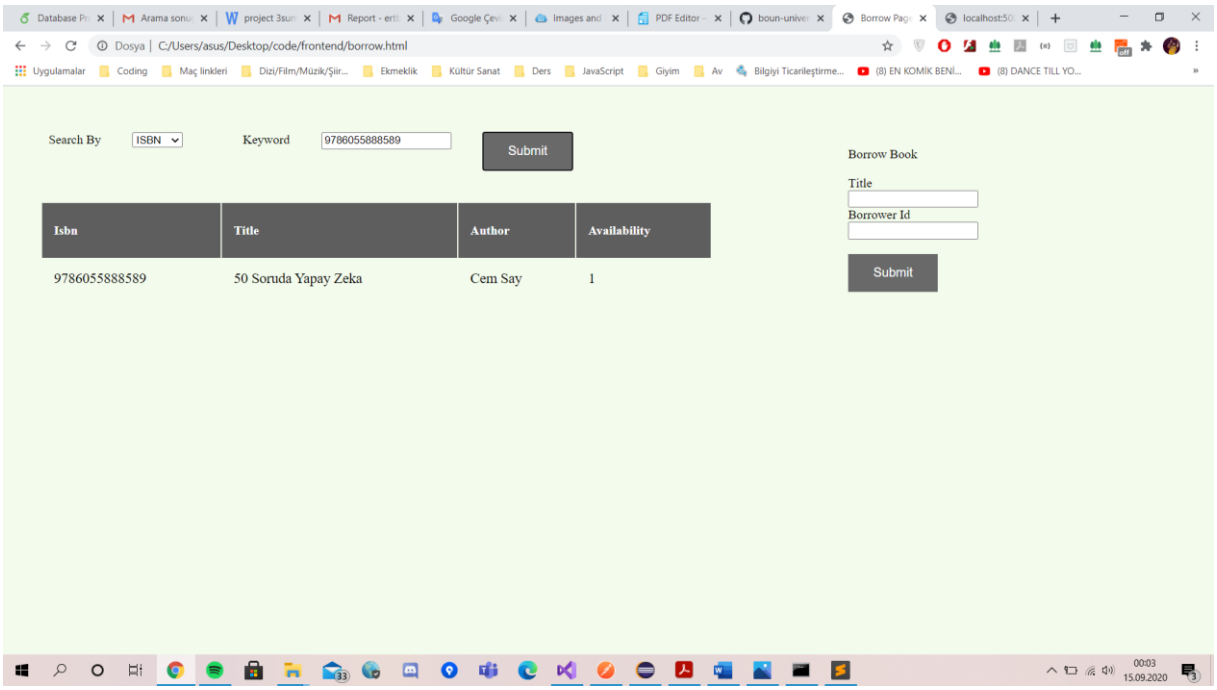
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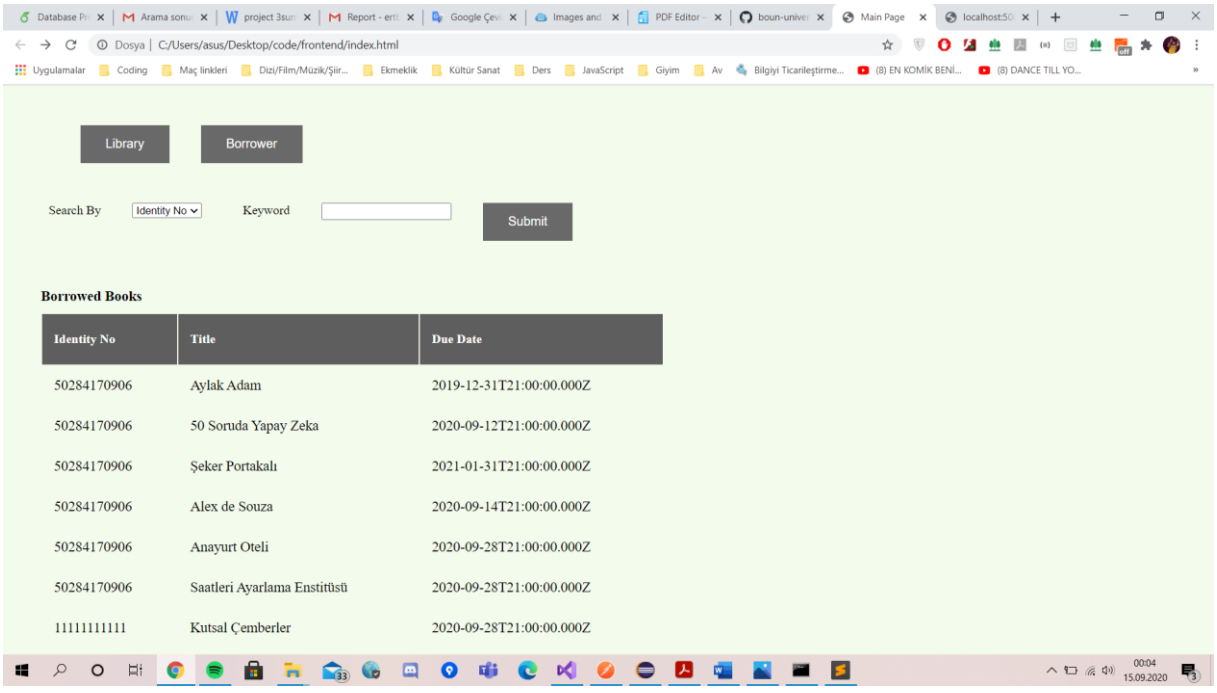
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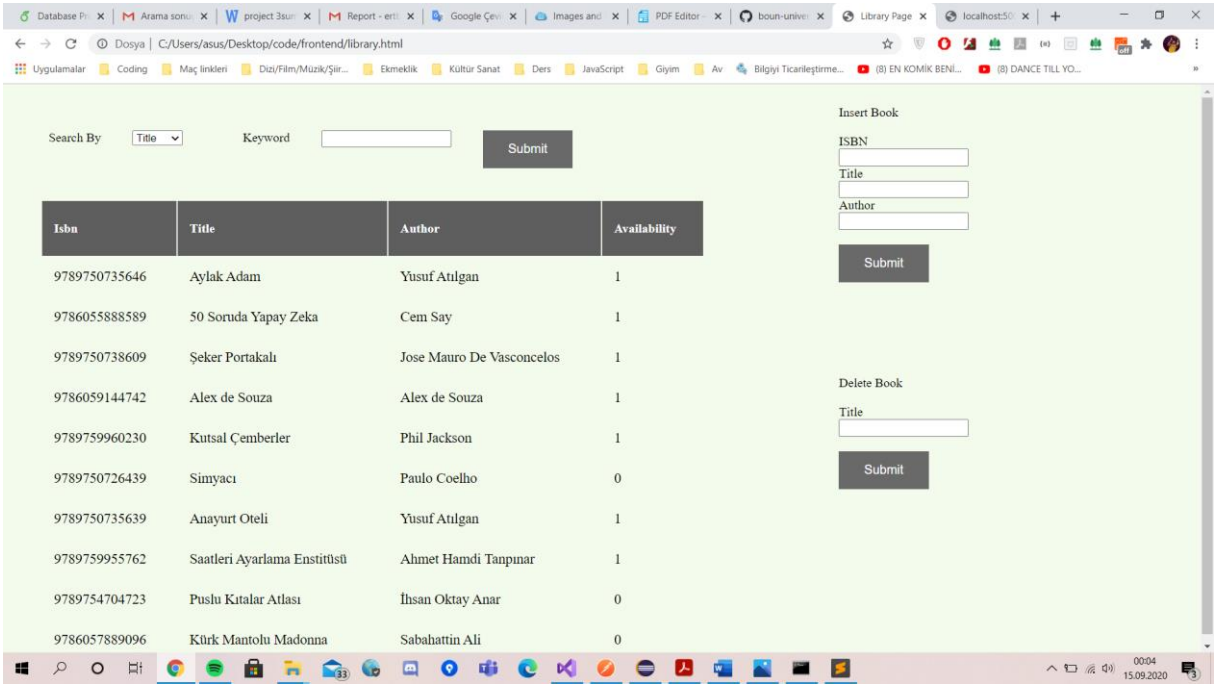
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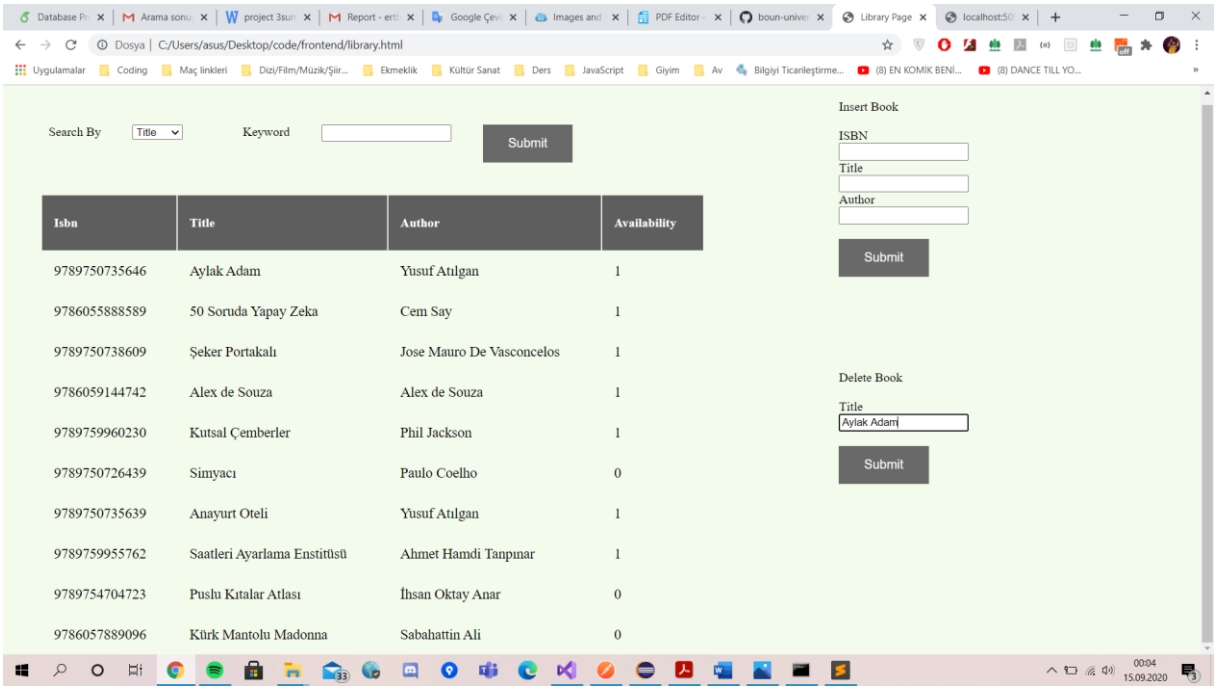
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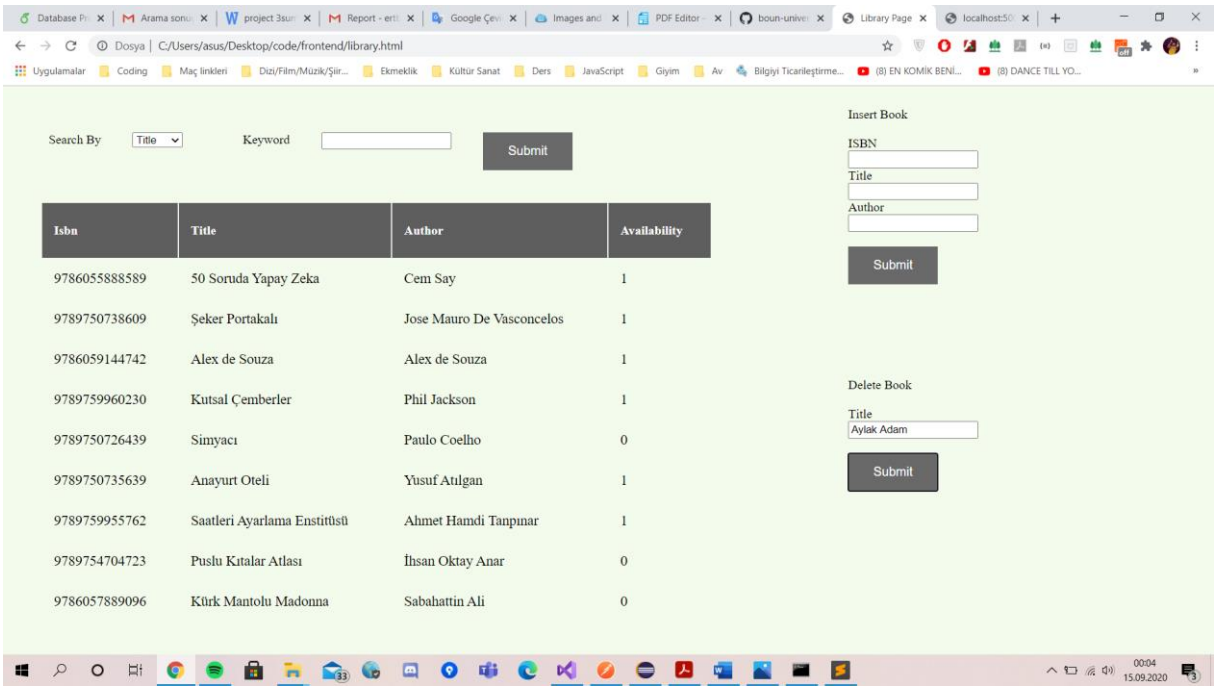
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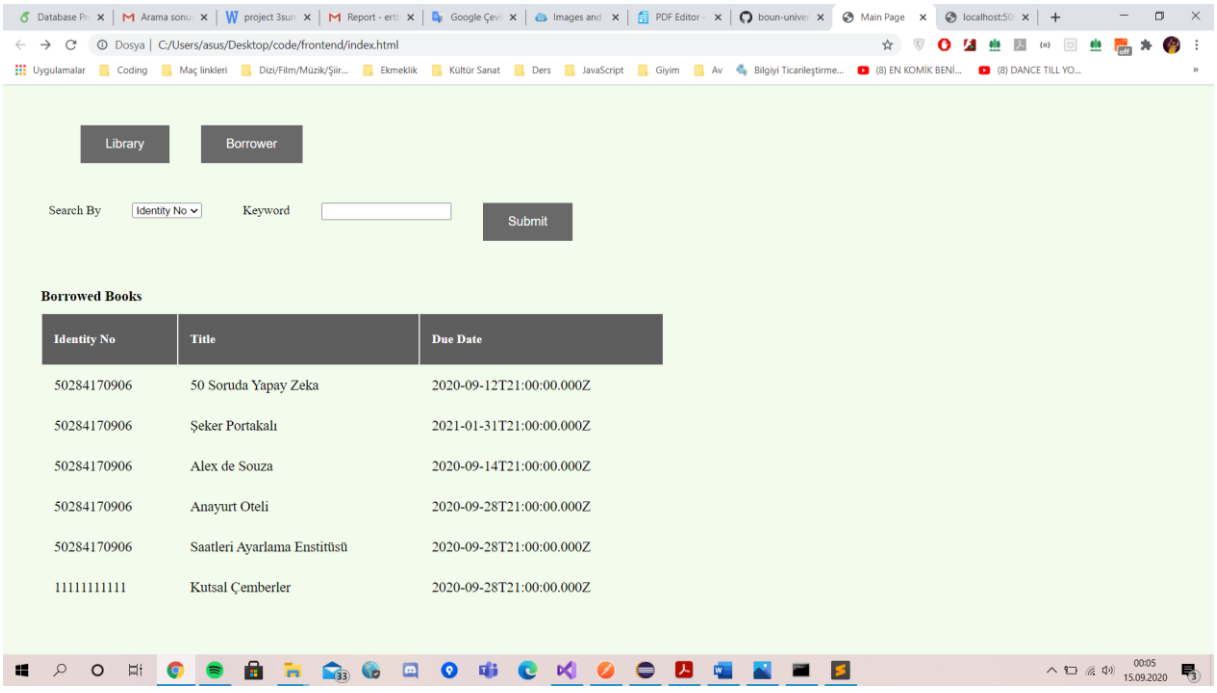
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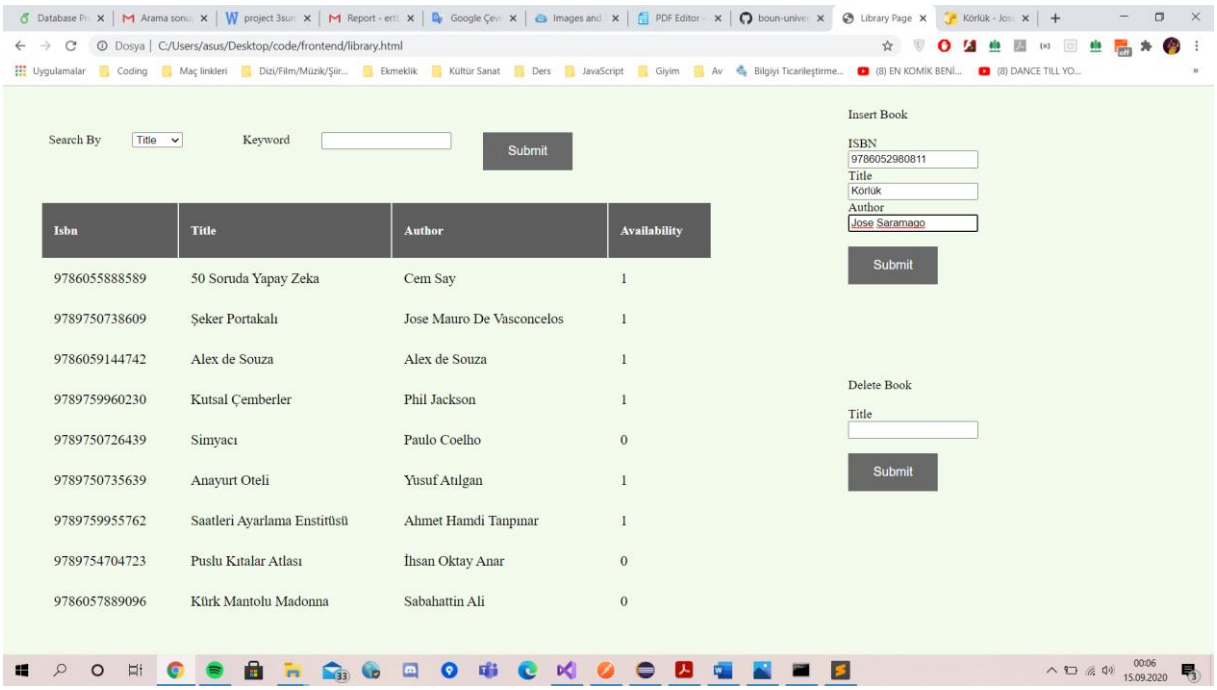


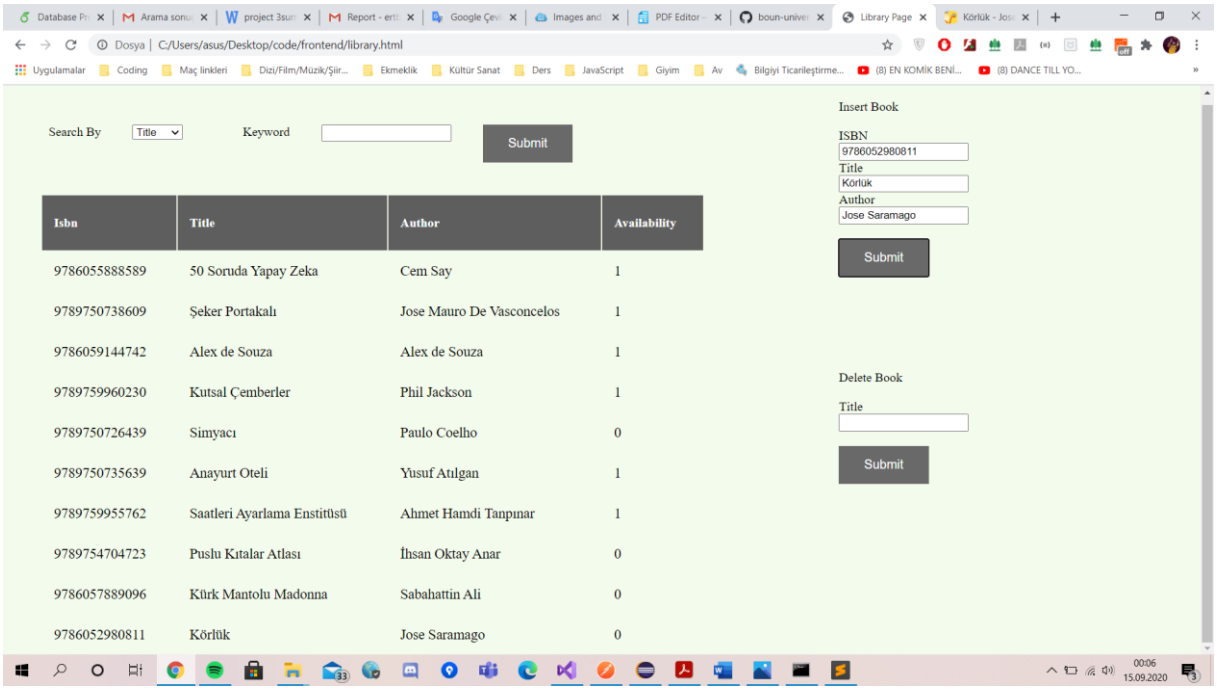


# 6 CONCLUSION & ASSESSMENT

I have completed library project. I used node.js for backend, HTML for web based interface, and mysql as database. I learned how to use node.js and how to create a database with sql.  I think this project is the best one of this term.