



# INFORMATICS INSTITUTE OF TECHNOLOGY

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## **I. Abstract**

This report brings out the way on how the solution was made and implemented for the problem of a bookstore. A computerized database for a bookstore named ABC Books store to store the information of the books available at the store for people is required. A database using MySQL software and python programming language was created for this as a solution. This database will help the user to refer to the books available at the store easily and features such as adding new records, updating the existing records, or deleting the existing records is also made possible in this for the users of the database. This report includes the python codes created and screenshots of the database structure and some sample records along with the features implemented inside them .

## **II. Acknowledgement**

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## 1. Question

Currently all books available at ABC books store are managed using a manual process. Users should search for books from the racks which is a time taking process. With the increase of software development in every field developing book management software will be helpful task. It is needed to develop a system which is useful for maintaining of books in a procedure-oriented manner. Users should be able to easily search for books from index page and search for books to find their required book.

Design and develop fully transactional console-based application which has the following functionalities.

1. Books: Facility to create information related each book in the bookstore.

**Input:** Book No (Primary Key), Title, Subject Code, Author, Publisher, Price, Location, and any other information you think it is useful to have.

2. Books Chapters: Facility to create books chapter information. For every book available on the site must have a clear view to read each chapter using books chapter's view.

**Input:** Book No, Chapter No, Title, starting page no, Ending page no

3. Subjects: Facility to create subjects. Books available on the site should sub divided into different category which will help users to easily find required category books.

**Input:** Subject Code, Name

4. Books Query: Direct search is needed to find books available on the site. Users must be able to search by book number, Book Title, Author, OR Publisher.

5. Add/Edit/Delete Books: Facility should be provided add, edit, or delete information related to a book.

### **1.1. Problem understanding**

ABC bookstore is a place where books can be referred by the people. The storekeepers manage all the records for the books available at the store manually by the employees which consumes more time and space while maintaining records and the books. This method of maintaining records can cause different problems such as duplication of data, waste of time and different formats of the records.

Therefore, the store needs a database software to maintain the details of the books available at the store as softcopies which make the users to find the books easily without referring to each book to find the book, they need which will reduce the time spared to search each book from the rack. To make this process easier, the database should help them to find the books using different types of data related to the books available for each book.

The users of the database should be able to add, update or delete the records in the database which will be available after stored in the database to decrease the cause of duplication of data and to maintain the records in an organized manner which will also increase efficiency and ease of work.

## 2. SQL Statements

```
CREATE DATABASE ABCbooksStore;
```

```
CREATE TABLE subjects (  
    subjectCode VARCHAR (4) NOT NULL,  
    subjectName VARCHAR (15) NOT NULL,  
    PRIMARY KEY (subjectCode));
```

```
CREATE TABLE Books (  
    bookNo INT (4) NOT NULL,  
    bookTitle VARCHAR (20) NOT NULL,  
    subjectCode VARCHAR (4) NOT NULL,  
    author VARCHAR (15),  
    publisher VARCHAR (15),  
    price FLOAT (10,2) NOT NULL,  
    location VARCHAR (3) NOT NULL,  
    isbn INT (10) NOT NULL,  
    PRIMARY KEY (bookNo),  
    FOREIGN KEY (subjectCode) REFERENCES subjects (SubjectCode));
```

```
CREATE TABLE Chapters (  
    bookNo INT (4) NOT NULL,  
    chapterNo VARCHAR (5) NOT NULL,  
    chapterTitle VARCHAR (20) NOT NULL,  
    startPg INT (4) NOT NULL,  
    endPg INT (4) NOT NULL,  
    PRIMARY KEY (chapterNo),  
    FOREIGN KEY (bookNo) REFERENCES books (bookNo));
```



The foreign keys that were created that is the constraints of the tables Books and Chapters need to be changed from RESTRICT to CASCADE to continue the update and delete features in the database.

This is done via

DATABASE > RESPECTED TABLE > STRUCTURE > RELATION VIEW and change the constraint types

### 3. Python Codes

#..DOC 334 Introduction to Programming II - P2 Coursework

#..Calling for a module in same folder

import printStatements

#\_\_\_\_\_Main program\_\_\_\_\_

#Connecting to mysql server

import mysql.connector

#..Open the created database connection with a dictionary

conDict = {'host':'localhost','database':'ABCbooksStore','user':'root','password':''}

db = mysql.connector.connect(\*\*conDict)

#..Prepare a cursor object using cursor() method to create tables

cursor = db.cursor()

#..initializing variables for loop

q1 = " "

q2 = " "

q3 = " "

q4 = " "

q2a = " "

q2b = " "

q2c = " "

q3a = " "

q3b = " "

q3c = " "

q4a = " "

q4b = " "

q4c = " "

choiceMain = True

ansMain = " "

#..Initializing variables for functions

record = " "

subject = " "

book = " "

chapter = " "

subject1 = " "

book1 = " "

chapter1 = " "

subject2 = " "

book2 = " "

chapter2 = " "

subject3 = " "

book3 = " "

chapter3 = " "

output = " "

output2 = " "

```
run = " "
```

```
while choiceMain:
```

```
    #..functions, inputs and conditions to search for records into the database
```

```
    q1 = input("Do you want to search for a record ? (Y/N) :")
```

```
    if q1 == "Y" or q1 == "y":
```

```
        #..Get user inputs to search for a record in the books table for direct search
```

```
        recorddetails = input("Book Number / Book Title / Author / Publisher:")
```

```
        if recorddetails == "Book Number" or recorddetails == "book number" or recorddetails ==  
"Book number" or recorddetails == "BOOK NUMBER":
```

```
            #..Get user inputs for book number to direct search
```

```
            nbookNo = input ("Enter book number :")
```

```
            #..execute SQL query using execute() method to view a record in books table
```

```
            cursor.execute ("SELECT * FROM books WHERE bookNo =" + nbookNo + "")
```

```
            #..Fetch results using fetchall() method
```

```
            data = cursor.fetchall()
```

```
            #..Printing values in the record
```

```
            for item in data:
```

```
                for value in item:
```

```
                    print (value,end=" ; ")
```

```
                print()
```

```
            printStatements.find(record)
```

```
        elif recorddetails == "Book Title" or recorddetails == "book title" or recorddetails == "Book  
title" or recorddetails == "BOOK TITLE":
```

```
#..Get user inputs for book title to direct search
nbooktitle = input ("Enter book title :")

#..execute SQL query using execute() method to view a record in books table
cursor.execute ("SELECT * FROM books WHERE bookTitle =" + nbooktitle + "")

#..Fetch results using fetchall() method
data = cursor.fetchall()

#..Printing values in the record
for item in data:
    for value in item:
        print (value,end=" ; ")
    print()

printStatements.find(record)

elif recorddetails == "Author" or recorddetails == "author" or recorddetails == "AUTHOR":
    #..Get user inputs for author of the book to direct search
    nauthor = input ("Enter author name :")

    #..execute SQL query using execute() method to view a record in books table
    cursor.execute ("SELECT * FROM books WHERE author =" + nauthor + "")

    #..Fetch results using fetchall() method
    data = cursor.fetchall()

    #..Printing values in the record
    for item in data:
```

```
        for value in item:
            print (value,end=" ; ")
        print()

    db.commit()

    printStatements.find(record)

elif recorddetails == "Publisher" or recorddetails == "publisher" or recorddetails ==
"PUBLISHER":
    #..Get user inputs for publisher of the book to direct search
    npublisher = input ("Enter publisher name :")

    #..execute SQL query using execute() method to view a record in books table
    cursor.execute ("SELECT * FROM books WHERE publisher =" + npublisher + "")

    #..Fetch results using fetchall() method
    data = cursor.fetchall()

    #..Printing values in the record
    for item in data:
        for value in item:
            print (value,end=" ; ")
        print()

    printStatements.find(record)

elif recorddetails != "Book Number" or recorddetails != "book number" or recorddetails !=
"Book number" or recorddetails != "BOOK NUMBER" or recorddetails != "Book Title" or
recorddetails != "book title" or recorddetails != "Book title" or recorddetails != "BOOK TITLE"
```

```
or recorddetails != "Author" or recorddetails != "author" or recorddetails != "AUTHOR" or  
recorddetails != "Publisher" or recorddetails != "publisher" or recorddetails != "PUBLISHER":
```

```
    print ()
```

```
    printStatements.wronginput(output)
```

```
    print ()
```

```
else:
```

```
    print ()
```

```
elif q1 == "N" or q1 == "n":
```

```
    #..functions, inputs and conditions to add new records into the database
```

```
    q2 = input("Do you want to add a record ? (Y/N) :")
```

```
    if q2 == "Y" or q2 == "y":
```

```
        #..Asking whether the user need to add a record to subjects table
```

```
        q2a = input("Do you want to add a record to subjects table ? (Y/N) :")
```

```
        if q2a == "Y" or q2a == "y":
```

```
            #..Get user inputs for subjects table
```

```
            usubjectCode = input("Enter subject code :")
```

```
            usubjectName = input("Enter subject name :")
```

```
            #..execute SQL query using execute() method to add new data for subjects table
```

```
            mySQLText1 = "INSERT INTO subjects (subjectCode,subjectName) VALUES  
(%s,%s)"
```

```
            myValues1 = (usubjectCode,usubjectName)
```

```
            cursor.execute (mySQLText1,myValues1)
```

```
            #..Commit the change
```

```
            db.commit()
```

```
            printStatements.add1(subject)
```

```
print()

elif q2a == "N" or q2a == "n":
    #..Asking whether the user need to add a record to books table
    q2b = input("Do you want to add a record to books table ? (Y/N) :")
    if q2b == "Y" or q2b == "y":
        #..Get user inputs for the Books table
        ubookNo = int(input("Enter book number :"))
        ubooktitle = input("Enter book title :")
        usubjectCode = input("Enter subject code :")
        uauthor = input("Enter author name :")
        upublisher = input("Enter publisher name :")
        uprice = float(input("Enter price:"))
        ulocation = input("Enter location:")
        uisbn = int(input("Enter ISBN number :"))

        #..execute SQL query using execute() method to add new data for books table
        mySQLText2 = "INSERT INTO books
(bookNo,bookTitle,subjectCode,author,publisher,price,location,isbn) VALUES
(%s,%s,%s,%s,%s,%s,%s,%s)"
        myValues2 =
(ubookNo,ubooktitle,usubjectCode,uauthor,upublisher,uprice,ulocation,uisbn)
        cursor.execute (mySQLText2,myValues2)

        #..Commit the change
        db.commit()

        printStatements.add2(book)

elif q2a == "N" or q2a == "n" or q2b == "N" or q2b == "n" :
```

```
#..Asking whether the user need to add a record to chapters table
q2c = input("Do you want to add a record to chapters table ? (Y/N) :")
if q2c == "Y" or q2c == "y":
    #..Get user inputs for the tables Books or sublects
    ubookNo = input("Enter book number :")
    uchapterNo = input("Enter chapter number :")
    uchaptertitle = input("Enter title :")
    ustartPg = int(input("Enter starting page :"))
    uendPg = int(input("Enter ending page :"))

    #..execute SQL query using execute() method to add new data for chapters table
    mySQLText3 = "INSERT INTO chapters
(bookNo,chapterNo,chapterTitle,startPg,endPg) VALUES (%s,%s,%s,%s,%s)"
    myValues3 = (ubookNo,uchapterNo,uchaptertitle,ustartPg,uendPg)
    cursor.execute (mySQLText3,myValues3)

    #..Commit the change
    db.commit()

    printStatements.add3(chapter)

elif q2c == "N" or q2c == "n":
    #..Input and conditions to run the complete program in a loop
    ansMain = input("Do you want to run the program again ? (Y/N) :")
    if ansAE == "Y" or ansMain == "y":
        choiceMain = True
        print ()
        continue
    elif ansMain == "N" or ansMain == "n":
```



```
        choiceMain = False
        print ()
        printStatements.main (run)
        break
    elif ansMain != "Y" or ansMain != "y" or ansMain != "N" or ansMain != "n":
        choiceMain = False
        print ()
        printStatements.wronginput(output)
    else:
        ansMain = input("Do you want to run the program again ? (Y/N) :")
        break

    elif q2c != "Y" or q2c != "y" or q2c != "N" or q2c != "n" or q2b != "Y" or q2b != "y"
or q2b != "N" or q2b != "n":
        print()
        printStatements.wronginput(output)
        print()
    else:
        print()

    elif q2b != "Y" or q2b != "y" or q2b != "N" or q2b != "n":
        print()
        printStatements.wronginput(output)
        print()
    else:
        print()

    elif q2a != "Y" or q2a != "y" or q2a != "N" or q2a != "n":
        print()
```

```
printStatements.wronginput(output)

print()

else:

    print()
```

#### #..Updating records

```
elif q2 == "N" or q2 == "n" or q1 == "N" or q1 == "n":

    #..Asking whether the user need update an available record

    q3 = input("Do you want to update a record ? (Y/N) :")

    if q3 == "Y" or q3 == "y":

        #..Asking whether the user need update an available record in subjects table

        q3a = input ("Do you want to update the subject table ? (Y/N) :")

        if q3a == "Y" or q3a == "y":

            #..Updating subjects table

            #..Asking the user which fields record need to be updated in subjects table

            subdetails = input ("subject Name / subject Code) :")

            if subdetails == "SUBJECT CODE" or subdetails == "Subject Code" or subdetails
== "Subject Code" or subdetails == "subject code":

                #..Get user inputs to update subject code

                usubjectCode = input("Enter existing subject code :")

                nsubjectCode = input("Enter new subject code :")

                #..execute SQL query using execute() method to update data in subjects table

                cursor.execute ("UPDATE subjects SET subjectCode = " + nsubjectCode + "
WHERE subjectCode = " + usubjectCode + """)

                #..Commit the change

                db.commit()
```

```
printStatements.update1(subject2)
```

```
elif subdetails == "SUBJECT NAME" or subdetails == "Subject name" or subdetails == "Subject Name" or subdetails == "subject name":
```

```
    #..Get user inputs to update subject name in subjects table
```

```
    usubjectCode = input("Enter subject code :")
```

```
    nsubjectName = input("Enter new subject name :")
```

```
    #..execute SQL query using execute() method to update data in subjects table
```

```
    cursor.execute ("UPDATE subjects SET subjectName = " + nsubjectName + " WHERE subjectCode = " + usubjectCode + """)
```

```
    #..Commit the change
```

```
    db.commit()
```

```
printStatements.update1(subject2)
```

```
elif subdetails != "SUBJECT NAME" or subdetails != "subject name" or subdetails != "Subject Name" or subdetails != "SUBJECT CODE" or subdetails != "Subject Code" or subdetails != "subject code":
```

```
    printStatements.wronginput(output)
```

```
else:
```

```
    print()
```

```
elif q3a == "N" or q3a == "n":
```

```
    #..Asking whether the user need update an available record in books table
```

```
    q3b = input ("Do you want to update the books table ? (Y/N) :")
```

```
    if q3b == "Y" or q3b == "y":
```

```
        #..Updating books table
```

```
        #..Asking the user which fields record need to be updated in books table
```

```
bookdetails = input ("Book Number / Book Title / Author / Publisher / Price  
/Location/ ISBN Number) :")
```

```
if bookdetails == "book number" or bookdetails == "Book Number" or  
bookdetails == "Book number" or bookdetails == "BOOK NUMBER":
```

```
#..Get user inputs to update book number
```

```
ubookNo = input("Enter existing book number :")
```

```
nbookNo = input("Enter new book number :")
```

```
#..execute SQL query using execute() method to update data in books table
```

```
cursor.execute ("UPDATE books SET bookNo = " + nbookNo + " WHERE  
bookNo = " + ubookNo + """)
```

```
#..Commit the change
```

```
db.commit()
```

```
printStatements.update2(book2)
```

```
elif bookdetails == "book title" or bookdetails == "Book Title" or bookdetails ==  
"Book title" or bookdetails == "BOOK TITLE":
```

```
#..Get user inputs to update book title in books table
```

```
ubookNo = input("Enter book number :")
```

```
nbookTitle = input("Enter new book title :")
```

```
#..execute SQL query using execute() method to update data in books table
```

```
cursor.execute ("UPDATE books SET bookTitle = " + nbookTitle + "  
WHERE bookNo = " + ubookNo + """)
```

```
#..Commit the change
```

```
db.commit()
```

```
printStatements.update2(book2)
```

```
elif bookdetails == "author" or bookdetails == "Author" or bookdetails ==
"AUTHOR":

    #..Get user inputs to update author of the book in books table
    ubookNo = input("Enter book number :")
    nauthor = input("Enter new author of the book :")

    #..execute SQL query using execute() method to update data in books table
    cursor.execute ("UPDATE books SET author = " + nauthor + " WHERE
bookNo = " + ubookNo + """)

    #..Commit the change
    db.commit()

    printStatements.update2(book2)

elif bookdetails == "publisher" or bookdetails == "Publisher" or bookdetails ==
"PUBLISHER":

    #..Get user inputs to update book title in books table
    ubookNo = input("Enter book number :")
    npublisher = input("Enter new publisher :")

    #..execute SQL query using execute() method to update data in books table
    cursor.execute ("UPDATE books SET publisher = " + npublisher + " WHERE
bookNo = " + ubookNo + """)

    #..Commit the change
    db.commit()

    printStatements.update2(book2)
```

```
elif bookdetails == "price" or bookdetails == "Price" or bookdetails == "PRICE":  
    #..Get user inputs to update price of a book in books table  
    ubookNo = input("Enter book number :")  
    nprice = input("Enter new price of the book :")  
  
    #..execute SQL query using execute() method to update data in books table  
    cursor.execute ("UPDATE books SET price = " + nprice + " WHERE bookNo  
= " + ubookNo + """)  
  
    #..Commit the change  
    db.commit()  
  
    printStatements.update2(book2)  
  
elif bookdetails == "location" or bookdetails == "Location" or bookdetails ==  
"LOCATION":  
    #..Get user inputs to update location in books table  
    ubookNo = input("Enter book number :")  
    nlocation = input("Enter new location of the book :")  
  
    #..execute SQL query using execute() method to update data in books table  
    cursor.execute ("UPDATE books SET location = " + nlocation + " WHERE  
bookNo = " + ubookNo + """)  
  
    #..Commit the change  
    db.commit()  
  
    printStatements.update2(book2)
```

```
elif bookdetails == "ISBN Number" or bookdetails == "isbn number" or  
bookdetails == "ISBN number" or bookdetails == "ISBN NUMBER":
```

```
    #..Get user inputs for to update ISBN Number in books table
```

```
    ubookNo = input("Enter book number :")
```

```
    nisbnNo = input("Enter new ISBN Number :")
```

```
    #..execute SQL query using execute() method to update data in books table
```

```
    cursor.execute ("UPDATE books SET isbnNo = " + nisbnNo + " WHERE  
bookNo = " + ubookNo + """)
```

```
    #..Commit the change
```

```
    db.commit()
```

```
    printStatements.update2(book2)
```

```
elif bookdetails != "book number" or bookdetails != "Book Number" or  
bookdetails != "Book number" or bookdetails != "BOOK NUMBER" or bookdetails != "book  
title" or bookdetails != "Book Title" or bookdetails != "Book title" or bookdetails != "BOOK  
TITLE" or bookdetails != "author" or bookdetails != "Author" or bookdetails != "AUTHOR" or  
bookdetails != "publisher" or bookdetails != "Publisher" or bookdetails != "PUBLISHER" or  
bookdetails != "price" or bookdetails != "Price" or bookdetails != "PRICE" or bookdetails !=  
"location" or bookdetails != "Location" or bookdetails != "LOCATION" or bookdetails !=  
"ISBN Number" or bookdetails != "isbn number" or bookdetails != "ISBN number" or  
bookdetails != "ISBN NUMBER":
```

```
    printStatements.wronginput(output)
```

```
else:
```

```
    print()
```

```
elif q3b == "N" or q3b == "n" or q3c == "N" or q3c == "n":
```

```
    #..Asking whether the user need update an available record in chapters table
```

```
    q3c = input ("Do you want to update the chapters table ? (Y/N) :")
```

```
if q3c == "Y" or q3c == "y":
    #..Updating chapters table
    #..Asking the user which fields record need to be updated in chapters table
    chapterdetails = input ("Chapter Number / Chapter Title / Starting Page No /
Ending Page No :")
    if chapterdetails == "chapter number" or chapterdetails == "Chapter Number"
or chapterdetails == "Chapter number" or chapterdetails == "CHAPTER NUMBER":
        #..Get user inputs to update chapter number in chapter table
        uchapterNo = input("Enter chapter number :")
        nchapterNo = input("Enter new chapter number :")

        #..execute SQL query using execute() method to update data in chapters
table
        cursor.execute ("UPDATE chapters SET chapterNo = '" + nchapterNo + '"
WHERE chapterNo = '" + uchapterNo + "'")

        #..Commit the change
        db.commit()

        printStatements.update3(chapter2)

    elif chapterdetails == "chapter title" or chapterdetails == "Chapter Title" or
chapterdetails == "Chapter title" or chapterdetails == "CHAPTER TITLE":
        #..Get user inputs to update chapter title in chapter table
        uchapterNo = input("Enter chapter number :")
        nchapterTitle = input("Enter new chapter title :")

        #..execute SQL query using execute() method to update data in chapter table
        cursor.execute ("UPDATE chapters SET chapterTitle = '" + nchapterTitle +
'" WHERE chapterNo = '" + uchapterNo + "'")
```



```
#..Commit the change
```

```
db.commit()
```

```
printStatements.update3(chapter2)
```

```
elif chapterdetails == "Starting Page No" or chapterdetails == "starting page  
no" or chapterdetails == "STARTING PG NO":
```

```
#..Get user inputs to update starting page of the chapter in chapter table
```

```
uchapterNo = input("Enter chapter number :")
```

```
nstartPg = input("Enter new starting page of the chapter :")
```

```
#..execute SQL query using execute() method to update data in chapter table
```

```
cursor.execute ("UPDATE chapters SET startPg = " + nstartPg + " WHERE  
chapterNo = " + uchapterNo + "")
```

```
#..Commit the change
```

```
db.commit()
```

```
printStatements.update3(chapter2)
```

```
elif chapterdetails == "Ending Page No" or chapterdetails == "ending page no"  
or chapterdetails == "ENDING PG NO":
```

```
#..Get user inputs to update ending page of the chapter in chapter table
```

```
uchapterNo = input("Enter chapter number :")
```

```
nendPg = input("Enter new ending page of the chapter :")
```

```
#..execute SQL query using execute() method to update data in chapter table
```

```
cursor.execute ("UPDATE chapters SET endPg = " + nendPg + " WHERE  
chapterNo = " + uchapterNo + "")
```

```
#..Commit the change
```

```
db.commit()
```

```
printStatements.update3(chapter2)
```

```
elif chapterdetails != "book number" or chapterdetails != "Book Number" or  
chapterdetails != "Book number" or chapterdetails != "BOOK NUMBER" or chapterdetails !=  
"chapter title" or chapterdetails != "Chapter Title" or chapterdetails != "Chapter title" or  
chapterdetails != "CHAPTER TITLE" or chapterdetails != "Starting Page No" or chapterdetails  
!= "starting page no" or chapterdetails != "STARTING PG NO" or chapterdetails != "Ending  
Page No" or chapterdetails != "ending page no" or chapterdetails != "ENDING PG NO":
```

```
printStatements.wronginput(output)
```

```
else:
```

```
print()
```

```
elif q3c == "N" or q3c == "n":
```

```
#..Input and conditions to run the complete program in a loop
```

```
ansMain = input("Do you want to run the program again ? (Y/N) :")
```

```
if ansMain == "Y" or ansMain == "y":
```

```
choiceMain = True
```

```
print ()
```

```
continue
```

```
elif ansMain == "N" or ansMain == "n":
```

```
choiceMain = False
```

```
print ()
```

```
printStatements.main (run)
```

```
break
```

```
elif ansMain != "Y" or ansMain != "y" or ansMain != "N" or ansMain != "n":
```

```
        choiceMain = False

        print ()

        printStatements.wronginput(output)

    else:

        ansMain = input("Do you want to run the program again ? (Y/N) :")

        break

    elif q3a != "N" or q3a != "n" or q3b != "N" or q3b != "n" or q3c != "N" or q3c != "n"
    or q3a != "Y" or q3a != "y" or q3b != "Y" or q3b != "y" or q3c != "Y" or q3c != "y":

        print()

        printStatements.wronginput(output)

        print()

    else:

        print()

    else:

        print()

elif q3 == "N" or q3 == "n" or q2 == "N" or q2 == "n" or q1 == "N" or q1 == "n":

    #..functions, inputs and conditions to delete the records in the data base

    q4 = input("Do you want to delete a record ? (Y/N) :")

    if q4 == "Y" or q4 == "y":

        #..Asking whether the user need to delete an available record in subjects table

        q4a = input ("Do you want to delete a record in the subject table ? (Y/N) :")

        if q4a == "Y" or q4a == "y":

            #..Get user inputs to delete a record in subjects table

            usubjectCode = input("Enter subject code :")

            #..execute SQL query using execute() method to delete a record in books table
```

```
        cursor.execute ("DELETE FROM subjects WHERE subjectCode = '" +
usubjectCode + "'")

        #..Commit the change

        db.commit()

        printStatements.delete1(subject3)

elif q4a == "N" or q4a == "n":
    #..Asking whether the user need delete an available record in books table
    q4b = input ("Do you want to delete a record in the books table ? (Y/N) :")
    if q4b == "Y" or q4b == "y":
        #..Get user inputs to delete a record in books table
        ubookNo = input("Enter book number :")

        #..execute SQL query using execute() method to delete a record in books
table
        cursor.execute ("DELETE FROM books WHERE bookNo = '" + ubookNo +
        """)

        #..Commit the change

        db.commit()

        printStatements.delete2(book3)

elif q4a == "N" or q4a == "n" or q4b == "N" or q4b == "n" :
    #..Asking whether the user need delete an available record in chapters table
    q4c = input ("Do you want to delete a record in the chapters table ? (Y/N) :")
    if q4c == "Y" or q4c == "y":
        #..Get user inputs to delete a record in chapters table
```

```
        uchapterNo = input("Enter chapter number :")

        #..execute SQL query using execute() method to delete a record in
        chapters table

        cursor.execute ("DELETE FROM chapters WHERE bookNo = '" +
        uchapterNo + "'")

        #..Commit the change

        db.commit()

    elif q4c == "N" or q4c == "n":

        #..Input and conditions to run the complete program in a loop

        ansAE = input("Do you want to run the program again ? (Y/N) :")

        if ansMain == "Y" or ansMain == "y":

            choiceMain = True

            print ()

            continue

        elif ansMain == "N" or ansMain == "n":

            choiceMain = False

            print ()

            printStatements.main (run)

            break

        elif ansMain != "Y" or ansMain != "y" or ansMain != "N" or ansMain != "n":

            choiceMain = False

            print ()

            printStatements.wronginput(output)

        else:

            ansMain = input("Do you want to run the program again ? (Y/N) :")

            break
```

```
else:
```

```
    print()
```

```
    elif q4a != "N" or q4a != "n" or q4b != "N" or q4b != "n" or q4c != "N" or q4c != "n"
or q4a != "Y" or q4a != "y" or q4b != "Y" or q4b != "y" or q4c != "Y" or q4c != "y":
```

```
        print()
```

```
        printStatements.wronginput(output)
```

```
        print()
```

```
elif q4 == "N" or q4 == "n":
```

```
    #..Input and conditions to run the complete program in a loop
```

```
    ansMain = input("Do you want to run the program again ? (Y/N) :")
```

```
    if ansMain == "Y" or ansMain == "y":
```

```
        choiceMain = True
```

```
        print ()
```

```
        continue
```

```
elif ansMain == "N" or ansMain == "n":
```

```
    choiceMain = False
```

```
    print ()
```

```
    printStatements.main (run)
```

```
    break
```

```
elif ansMain != "Y" or ansMain != "y" or ansMain != "N" or ansMain != "n":
```

```
    choiceMain = False
```

```
    print ()
```

```
    printStatements.wronginput(output)
```

```
else:
```

```
    ansMain = input("Do you want to run the program again ? (Y/N) :")
```

```
break
```

```
elif q4 != "Y" or q4 != "y" or q4 != "N" or q4 != "n":
```

```
    print ()
```

```
    printStatements.wronginput(output)
```

```
    print ()
```

```
else:
```

```
    print()
```

```
elif q3 != "Y" or q3 != "y" or q3 != "N" or q3 != "n" or q1 != "Y" or q1 != "y" or q1 != "N" or q1 != "n" or q2 != "Y" or q2 != "y" or q2 != "N" or q2 != "n":
```

```
    print ()
```

```
    printStatements.wronginput(output)
```

```
    print ()
```

```
else:
```

```
    print()
```

```
elif q1 != "Y" or q1 != "y" or q1 != "N" or q1 != "n" or q2 != "Y" or q2 != "y" or q2 != "N" or q2 != "n" :
```

```
    print ()
```

```
    printStatements.wronginput(output)
```

```
    print ()
```

```
else:
```

```
    print()
```

```
elif q1 != "Y" or q1 != "y" or q1 != "N" or q1 != "n" or q2 != "Y" or q2 != "y" or q2 != "N" or q2 != "n" or q3 != "Y" or q3 != "y" or q3 != "N" or q3 != "n" or q4 != "Y" or q4 != "y" or q4 != "N" or q4 != "n":
```

```
    print ()
```

```
    printStatements.wronginput(output)
```

```
print ()
```

```
#..Input and conditions to run the complete program in a loop
```

```
ansMain = input("Do you want to run the program again ? (Y/N) :")
```

```
if ansMain == "Y" or ansMain == "y":
```

```
    print ()
```

```
    continue
```

```
elif ansMain == "N" or ansMain == "n":
```

```
    choiceMain = False
```

```
    print ()
```

```
    printStatements.main (run)
```

```
    break
```

```
elif ansMain != "Y" or ansMain != "y" or ansMain != "N" or ansMain != "n":
```

```
    choiceMain = False
```

```
    print ()
```

```
    printStatements.wronginput(output)
```

```
else:
```

```
    ansMain = input("Do you want to run the program again ? (Y/N) :")
```

```
break
```

```
#..close database
```

```
db.close()
```



## 4. Functions Module

These functions in the module is used to print the necessary statements at necessary places.

```
def find (record):
```

```
    record = print("Record found")
```

```
def wronginput (output):
```

```
    output = print ("Invalid input Try again..")
```

```
    return output
```

```
def add1 (subject):
```

```
    subject = print ("Subject Recorded")
```

```
    return subject
```

```
def add2 (book):
```

```
    book = print("Book Recorded")
```

```
    return book
```

```
def add3 (chapter):
```

```
    chapter = print ("Chapter Recorded")
```

```
return chapter
```

```
def update1 (subject2):
```

```
    subject1 = print("Subject Updated")
```

```
    return subject1
```

```
def update2 (book2):
```

```
    book1 = print("Book Updated")
```

```
    return book1
```

```
def update3 (chapter2):
```

```
    chapter1 = print("Chapter Updated")
```

```
    return chapter1
```

```
def delete1 (subject3):
```

```
    subject2 = print("Subject Deleted")
```

```
    return subject2
```

```
def delete2 (book3):
```

```
    book2 = print("Book Deleted")
```

```
    return book2
```

```
def delete3 (chapter3):
```

```
    chapter2 = print("Chapter Deleted")
```

```
    return chapter2
```

```
def main (run):
```

```
    run = print("Process Finished")
```

```
    return run
```

## 5. Test Cases

Test case No	Input	Expected Output	Actual Output	Remark (Pass/Fail)
1.1	bookNo : 9	Record Found	Record Found	Pass
1.2	bookNo : 65	65 ; Language ; Eng1 ; Pearl ; Pearson ; 1326.0 ; E1 ; 6721 ; Record Found	65 ; Language ; Eng1 ; Pearl ; Pearson ; 1326.0 ; E1 ; 6721 ; Record Found	Pass
1.3	bookNo 6	Record Found	Record Found	Pass
2.1	bookTitle Language	65 ; Language ; Eng1 ; Pearl ; Pearson ; 1326.0 ; E1 ; 6721 ; Record Found	65 ; Language ; Eng1 ; Pearl ; Pearson ; 1326.0 ; E1 ; 6721 ; Record Found	Pass
2.2	bookTitle	Record Found	Record Found	Pass
2.3	bookTitle	Record Found	Record Found	Pass
2.1	Author : Pearl	65 ; Language ; Eng1 ; Pearl ; Pearson ; 1326.0 ; E1 ; 6721 ; Record Found	65 ; Language ; Eng1 ; Pearl ; Pearson ; 1326.0 ; E1 ; 6721 ; Record Found	Pass
2.2	Author	Record Found	Record Found	Pass
2.3	Author	Record Found	Record Found	Pass
3.1	Publisher Pearson	65 ; Language ; Eng1 ; Pearl ; Pearson ; 1326.0 ; E1 ; 6721 ; Record Found	65 ; Language ; Eng1 ; Pearl ; Pearson ; 1326.0 ; E1 ; 6721 ; Record Found	Pass
3.2	publisher	Record Found	Record Found	Pass
3.3	publisher	Record Found	Record Found	Pass
4.1	SubjectCode SubjectName	Record Found	Record Found	Pass
4.2	SubjectCode SubjectName	Record Found	Record Found	Pass
4.3	SubjectCode SubjectName			
5.1	bookNo bookTitle subjectCode author publisher price location	Book Record	Book Recorded	Pass

	isbn			
5.2	bookNo	Book Record	Book Recorded	Pass
	bookTitle			
	subjectCode			
	author			
	publisher			
	price			
	location			
	isbn			
5.3	bookNo	Book Record	Book Recorded	Pass
	bookTitle			
	subjectCode			
	author			
	publisher			
	price			
	location			
	isbn			
6.1	bookNo	Chapter Recorder	Chapter Recorder	Pass
	chapterNo			
	chapterTitle			
	startPg			
6.2	endPg	Chapter Recorder	Chapter Recorder	Pass
	startPg			
	endPg			
	startPg			
6.3	endPg	Chapter Recorder	Chapter Recorder	Pass
	startPg			
	startPg			
	endPg			
	startPg			
	endPg			
	startPg			

## 6. Screenshot of Database Structure

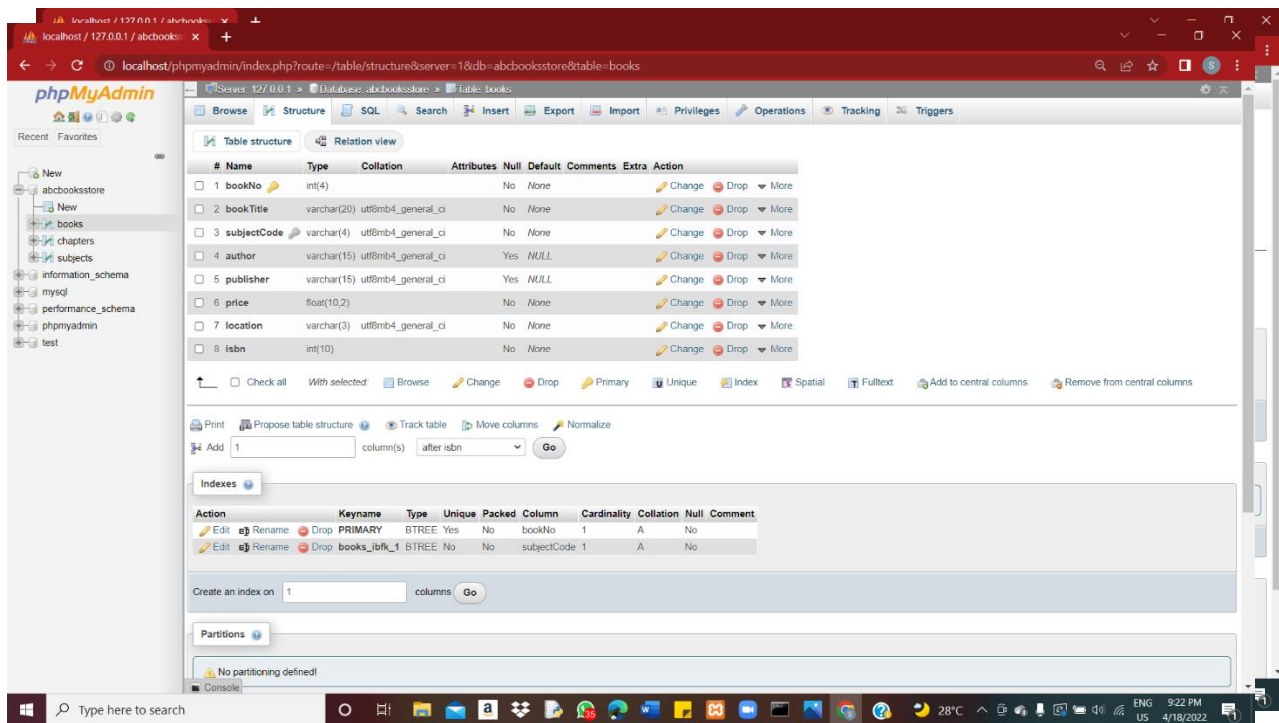


Figure 1 Database

Figure 2 Database

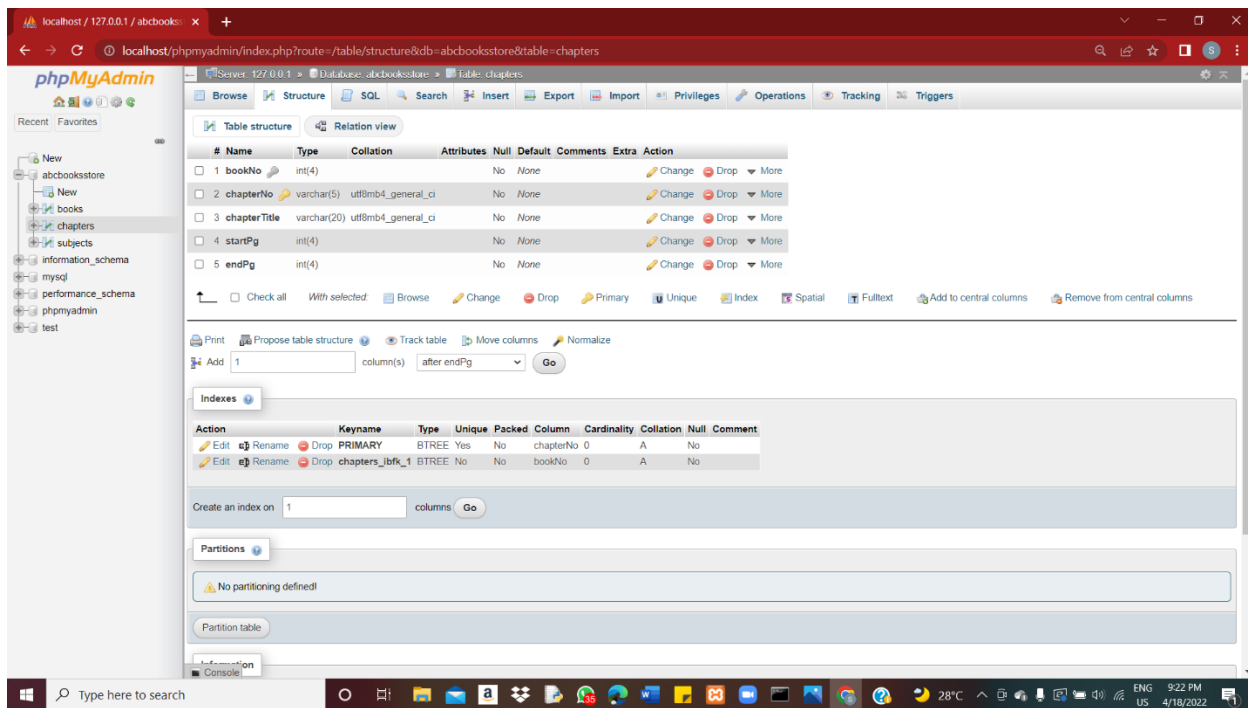


Figure 3 Database

## 1.2.Screenshots of Python program test cases

```

Command Prompt
Enter price:1326
Enter location:E1
Enter ISBN number :6721
Book Recorded
Do you want to run the program again ? (Y/N) :Y

Do you want to search for a record ? (Y/N) :N
Do you want to add a record ? (Y/N) :N
Do you want to update a record ? (Y/N) :N
Do you want to delete a record ? (Y/N) :Y
Do you want to delete a record in the subject table ? (Y/N) :N
Do you want to delete a record in the books table ? (Y/N) :Y
Enter book number :5
Book Deleted
Do you want to run the program again ? (Y/N) :Y

Do you want to search for a record ? (Y/N) :N
Do you want to add a record ? (Y/N) :N
Do you want to update a record ? (Y/N) :N
Do you want to delete a record ? (Y/N) :Y
Do you want to delete a record in the subject table ? (Y/N) :N
Do you want to delete a record in the books table ? (Y/N) :N
Do you want to delete a record in the chapters table ? (Y/N) :Y
Enter chapter number :8V
Do you want to run the program again ? (Y/N) :N

Process Finished

C:\Users\savinash\Desktop\New folder>1
Do you want to search for a record ? (Y/N) :N
Do you want to add a record ? (Y/N) :N
Do you want to update a record ? (Y/N) :N
Do you want to delete a record ? (Y/N) :N
Do you want to run the program again ? (Y/N) :N

Process Finished

C:\Users\savinash\Desktop\New folder>_

```

Figure 4 Test case

Fiaure 6 Test case

```

Command Prompt
Traceback (most recent call last):
  File "C:\Users\savinash\Desktop\New folder\1.py", line 48, in <module>
    chapter2
NameError: name 'chapter2' is not defined. Did you mean: 'chapter'?

C:\Users\savinash\Desktop\New folder>1
Do you want to search for a record ? (Y/N) :N
Do you want to add a record ? (Y/N) :N
Do you want to update a record ? (Y/N) :N
Do you want to delete a record ? (Y/N) :Y
Do you want to delete a record in the subject table ? (Y/N) :Y
Enter subject code :SC11
Subject Deleted
Do you want to run the program again ? (Y/N) :Y

Do you want to search for a record ? (Y/N) :N
Do you want to add a record ? (Y/N) :Y
Do you want to add a record to subjects table ? (Y/N) :y
Enter subject code :Eng1
Enter subject name :English
Subject Recorded
Do you want to run the program again ? (Y/N) :y

Do you want to search for a record ? (Y/N) :N
Do you want to add a record ? (Y/N) :y
Do you want to add a record to subjects table ? (Y/N) :N
Do you want to add a record to books table ? (Y/N) :y
Enter book number :65
Enter book title :Language
Enter subject code :Eng1
Enter author name :Pearl
Enter publisher name :Pearson
Enter price:1326
Enter location:E1
Enter ISBN number :6721
Book Recorded
Do you want to run the program again ? (Y/N) :Y

Do you want to search for a record ? (Y/N) :N
Do you want to add a record ? (Y/N) :N
Do you want to update a record ? (Y/N) :N
Do you want to delete a record ? (Y/N) :Y
Do you want to delete a record in the subject table ? (Y/N) :N
Do you want to delete a record in the books table ? (Y/N) :Y
Enter book number :5
Book Deleted
Do you want to run the program again ? (Y/N) :Y

Do you want to search for a record ? (Y/N) :N

```

Figure 5 Test case

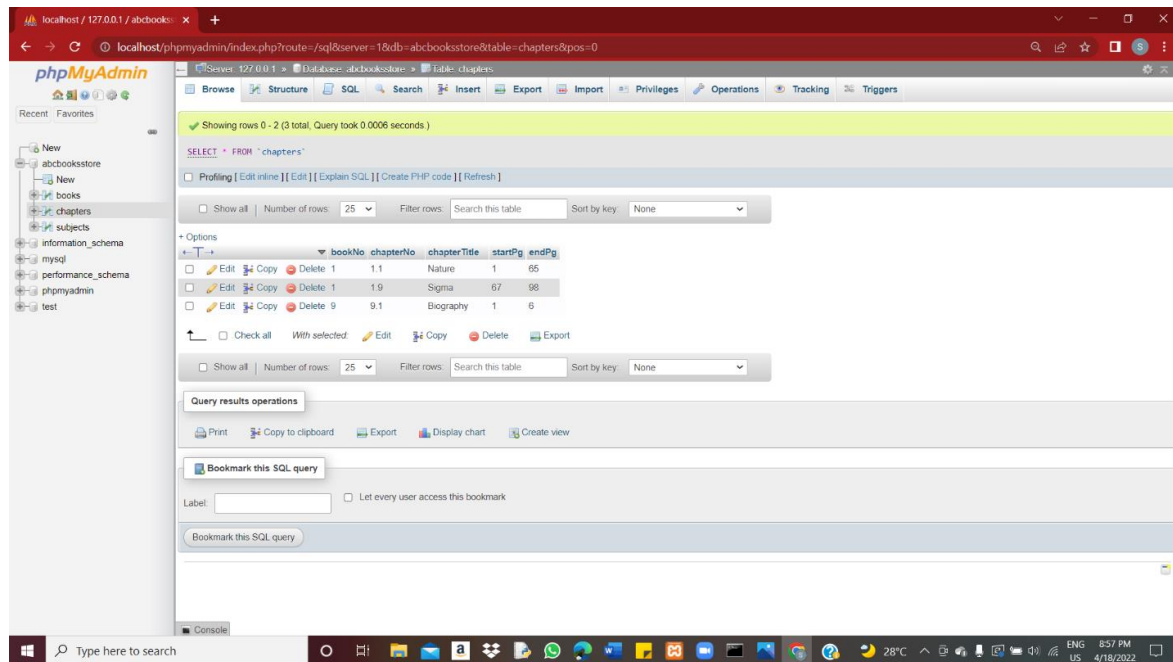


Figure 7 Database tested

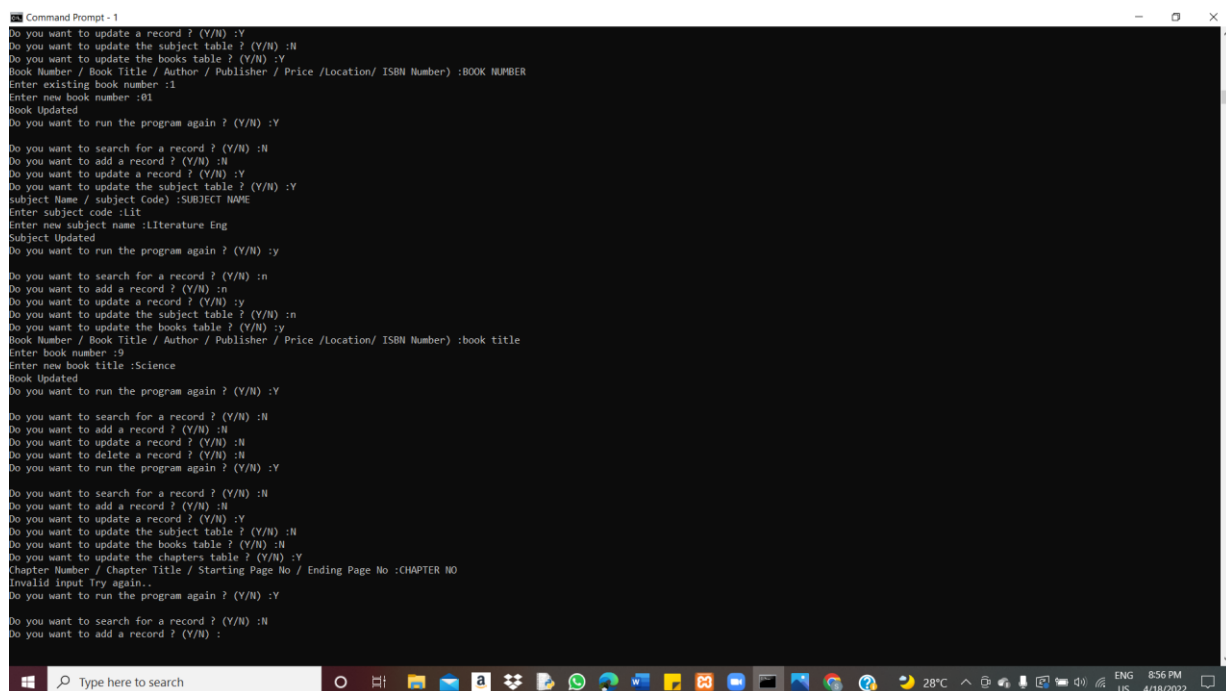


Figure 8 Test case



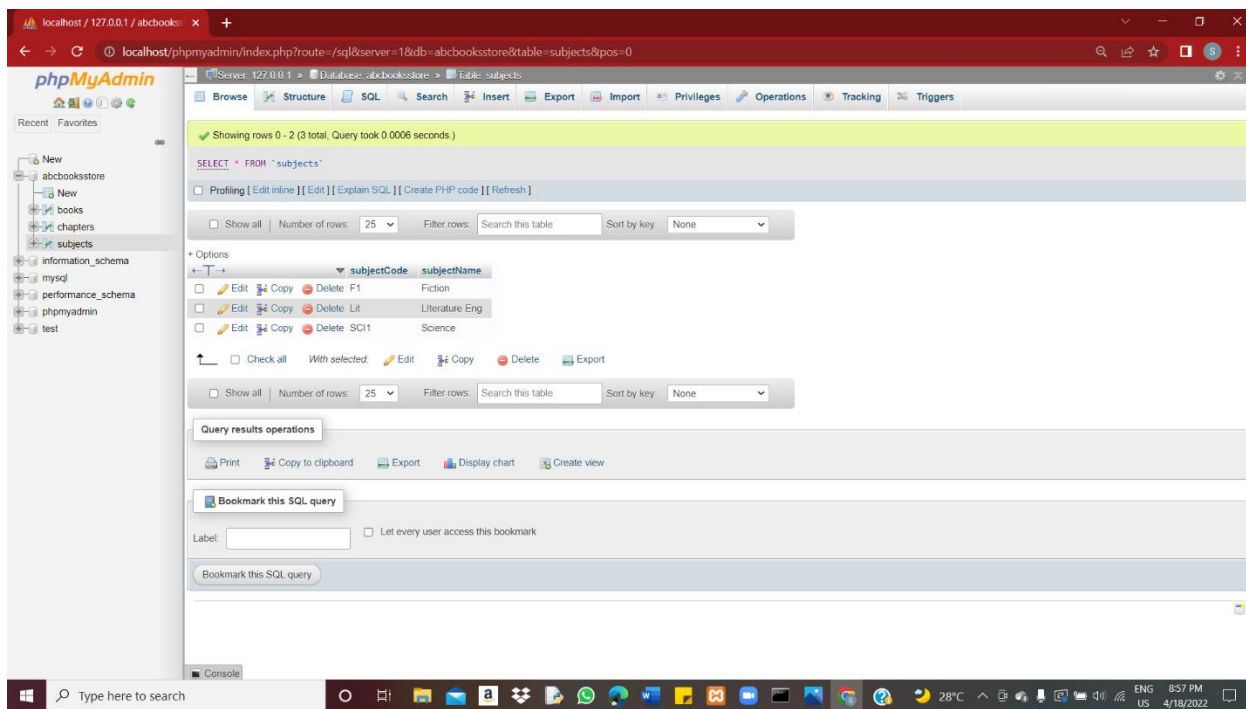


Figure 9 Test case

```

Command Prompt - 1

Do you want to run the program again ? (Y/N) :y

Do you want to search for a record ? (Y/N) :y
Book Number / Book Title / Author / Publisher:Publication

Invalid input Try again..

Do you want to run the program again ? (Y/N) :Publisher
Invalid input Try again..

C:\Users\savinash\Desktop\New folder>1
Do you want to search for a record ? (Y/N) :y
Book Number / Book Title / Author / Publisher:publisher
Enter publisher name :pearson
5 ; The Bear ; Lit ; Anton Chekov ; Pearson ; 1500.0 ; Lit ; 4375 ;
Record found
Do you want to run the program again ? (Y/N) :y

Do you want to search for a record ? (Y/N) :n
Do you want to add a record ? (Y/N) :n
Do you want to update a record ? (Y/N) :y
Do you want to update the subject table ? (Y/N) :y
subject Name / subject Code) :subject code
Enter existing subject code :51
Enter new subject code :SCI1
Subject Updated
Do you want to run the program again ? (Y/N) :Y

Do you want to search for a record ? (Y/N) :Y
Book Number / Book Title / Author / Publisher:BH

Invalid input Try again..

Do you want to run the program again ? (Y/N) :Y

Do you want to search for a record ? (Y/N) :N
Do you want to add a record ? (Y/N) :N
Do you want to update a record ? (Y/N) :Y
Do you want to update the subject table ? (Y/N) :N
Do you want to update the books table ? (Y/N) :Y
Book Number / Book Title / Author / Publisher / Price / Location/ ISBN Number) :BOOK NUMBER
Enter existing book number :1
Enter new book number :01
Book Updated
Do you want to run the program again ? (Y/N) :

```

Figure 10 Test case

```

Command Prompt - 1
Invalid input Try again..

Do you want to run the program again ? (Y/N) :y

Do you want to search for a record ? (Y/N) :n
Do you want to add a record ? (Y/N) :y
Do you want to add a record to subjects table ? (Y/N) :y
Enter subject code :S1
Enter subject name :Science
Subject Recorded

Do you want to run the program again ? (Y/N) :y

Do you want to search for a record ? (Y/N) :n
Do you want to add a record ? (Y/N) :y
Do you want to add a record to subjects table ? (Y/N) :y
Enter subject code :F1
Enter subject name :Fiction
Subject Recorded

Do you want to run the program again ? (Y/N) :y

Do you want to search for a record ? (Y/N) :n
Do you want to add a record ? (Y/N) :y
Do you want to add a record to subjects table ? (Y/N) :y
Enter subject code :Lit
Enter subject name :Literature
Subject Recorded

Do you want to run the program again ? (Y/N) :

```

Figure 14 Test case

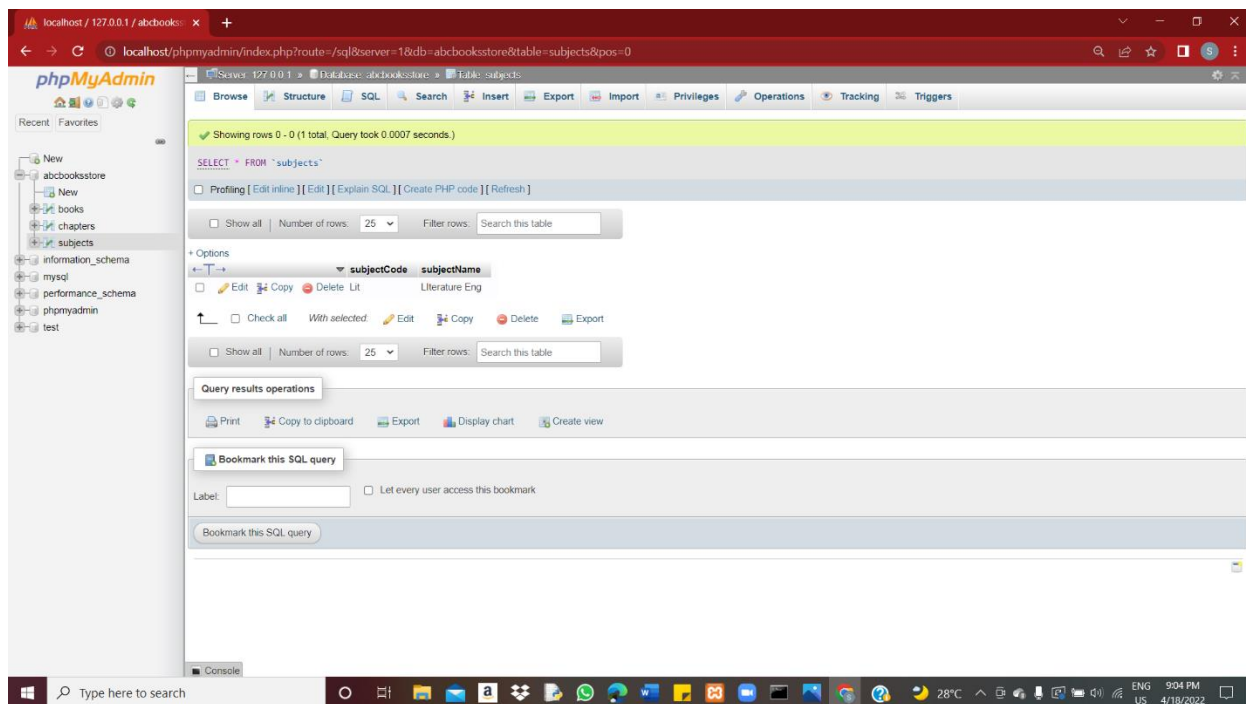


Figure 11 Test case

```

Command Prompt - 1
Do you want to search for a record ? (Y/N) :n
Do you want to add a record ? (Y/N) :y
Do you want to add a record to subjects table ? (Y/N) :n
Do you want to add a record to books table ? (Y/N) :y
Enter book number :1
Enter book title :Encyclopedia
Enter subject code :S1
Enter author name :Pillini
Enter publisher name :EduPub
Enter price:2764
Enter location:SC1
Enter ISBN number :1765
Book Recorded
Do you want to run the program again ? (Y/N) :Y

Do you want to search for a record ? (Y/N) :n
Do you want to add a record ? (Y/N) :y
Do you want to add a record to subjects table ? (Y/N) :n
Do you want to add a record to books table ? (Y/N) :y
Enter book number :5
Enter book title :The Bear
Enter subject code :Lit
Enter author name :Anton Chekov
Enter publisher name :Pearson
Enter price:1500
Enter location:Lit1
Enter ISBN number :4375
Book Recorded
Do you want to run the program again ? (Y/N) :y

Do you want to search for a record ? (Y/N) :n
Do you want to add a record ? (Y/N) :y
Do you want to add a record to subjects table ? (Y/N) :n
Do you want to add a record to books table ? (Y/N) :n
Do you want to add a record to chapters table ? (Y/N) :n
Do you want to run the program again ? (Y/N) :n
Traceback (most recent call last):
  File "C:\Users\savinash\Desktop\New folder\1.py", line 207, in <module>
    if ansAE == "Y" or ansMain == "Y":
NameError: name 'ansAE' is not defined

C:\Users\savinash\Desktop\New folder>1
Do you want to search for a record ? (Y/N) :

```

Figure 15 Test case

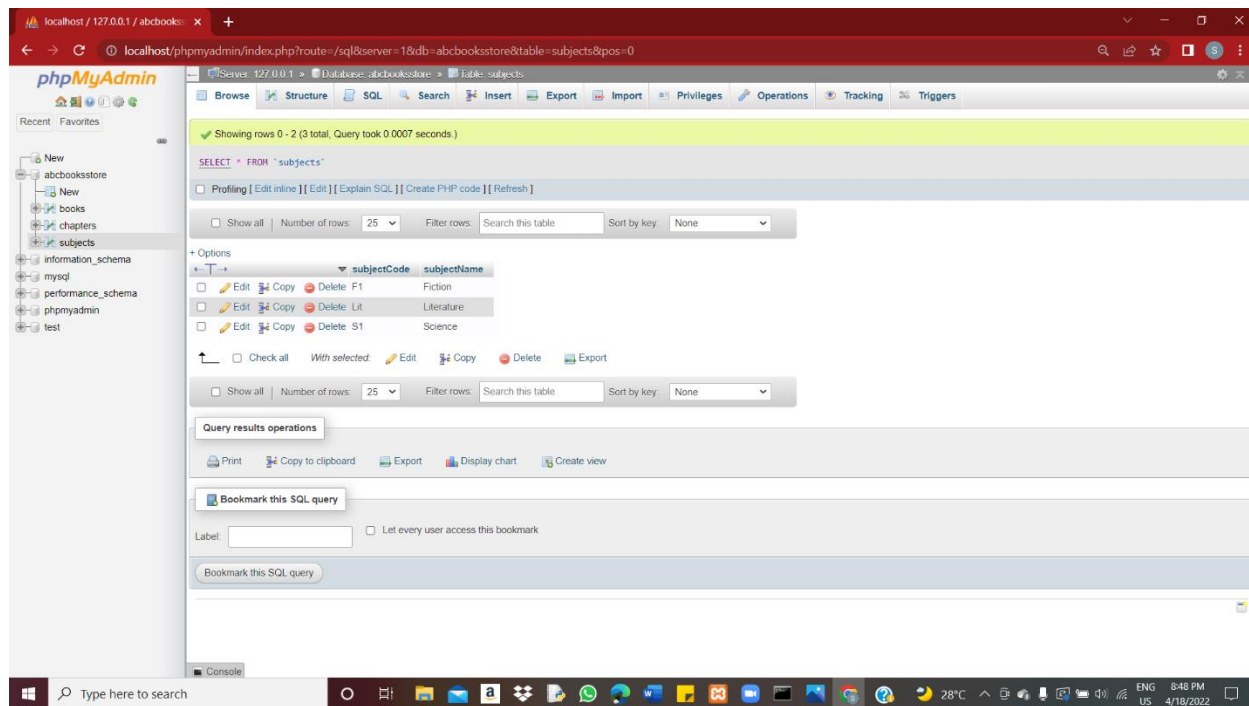


Figure 16 Test case

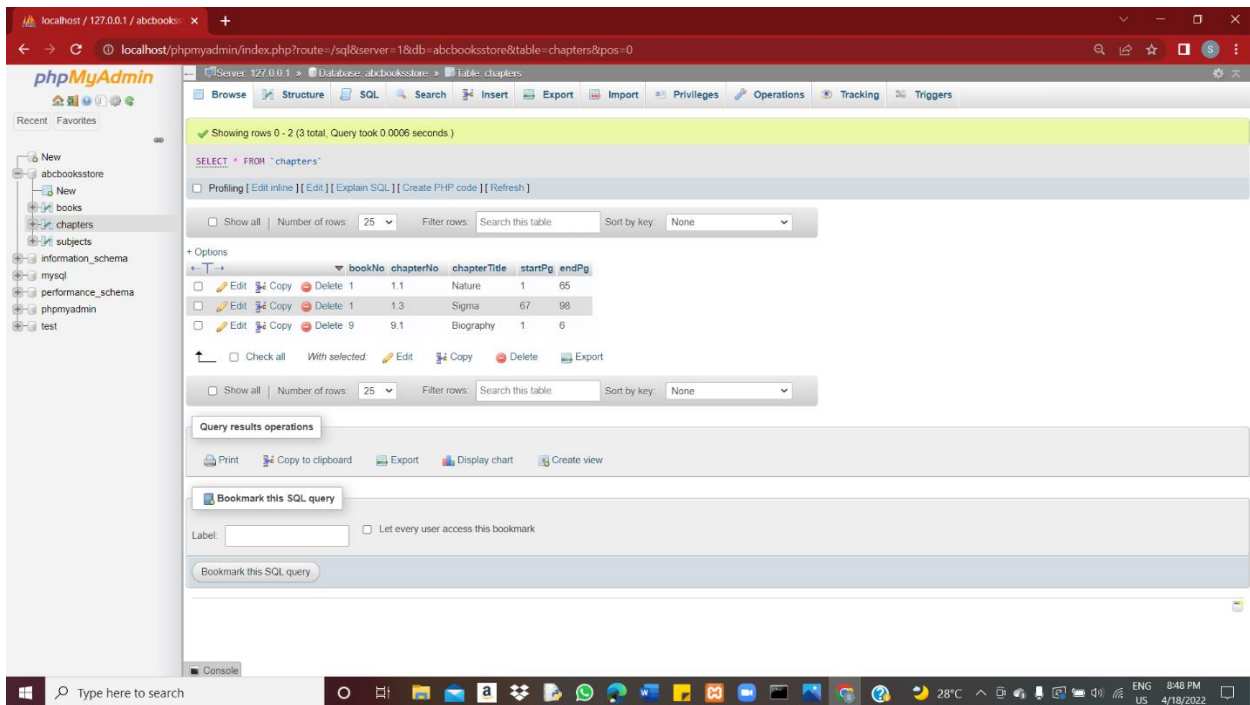


Figure 17 Test case

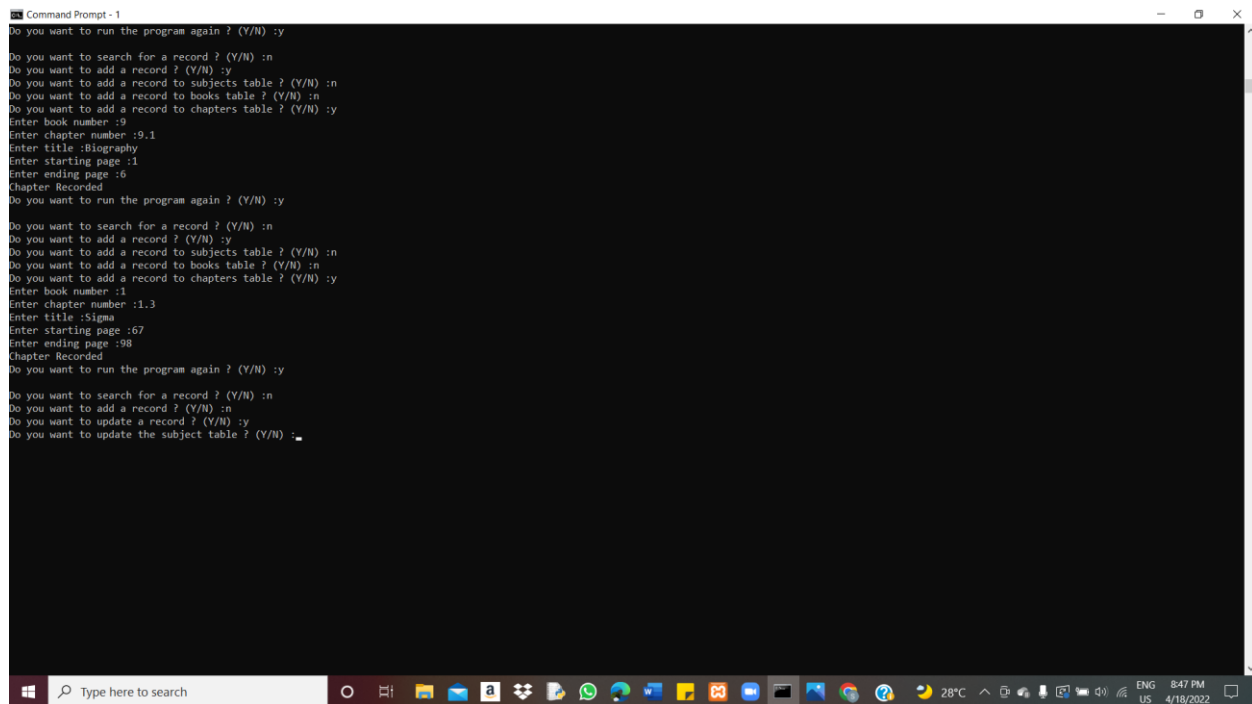


Figure 18 Test case



```

Command Prompt - 1
Enter new subject name :Literature Eng
Subject Updated
Do you want to run the program again ? (Y/N) :y

Do you want to search for a record ? (Y/N) :n
Do you want to add a record ? (Y/N) :n
Do you want to update a record ? (Y/N) :y
Do you want to update the subject table ? (Y/N) :n
Do you want to update the books table ? (Y/N) :y
Book Number / Book Title / Author / Publisher / Price /Location/ ISBN Number :book title
Enter book number :9
Enter new book title :Science
Book Updated
Do you want to run the program again ? (Y/N) :Y

Do you want to search for a record ? (Y/N) :N
Do you want to add a record ? (Y/N) :N
Do you want to update a record ? (Y/N) :N
Do you want to delete a record ? (Y/N) :N
Do you want to run the program again ? (Y/N) :Y

Do you want to search for a record ? (Y/N) :N
Do you want to add a record ? (Y/N) :N
Do you want to update a record ? (Y/N) :Y
Do you want to update the subject table ? (Y/N) :N
Do you want to update the books table ? (Y/N) :N
Do you want to update the chapters table ? (Y/N) :Y
Chapter Number / Chapter Title / Starting Page No / Ending Page No :CHAPTER NO
Invalid input Try again...
Do you want to run the program again ? (Y/N) :Y

Do you want to search for a record ? (Y/N) :N
Do you want to add a record ? (Y/N) :
Do you want to update a record ? (Y/N) :Y
Do you want to update the subject table ? (Y/N) :N
Do you want to update the books table ? (Y/N) :N
Do you want to update the chapters table ? (Y/N) :Y
Chapter Number / Chapter Title / Starting Page No / Ending Page No :CHAPTER NUMBER
Enter chapter number :1.3
Enter new chapter number :1.9
Chapter Updated
Do you want to run the program again ? (Y/N) :Y

Do you want to search for a record ? (Y/N) :N
Do you want to add a record ? (Y/N) :N
Do you want to update a record ? (Y/N) :N
Do you want to delete a record ? (Y/N) :Y
Do you want to delete a record in the subject table ? (Y/N) :Y
Enter subject code :11
Traceback (most recent call last):

```

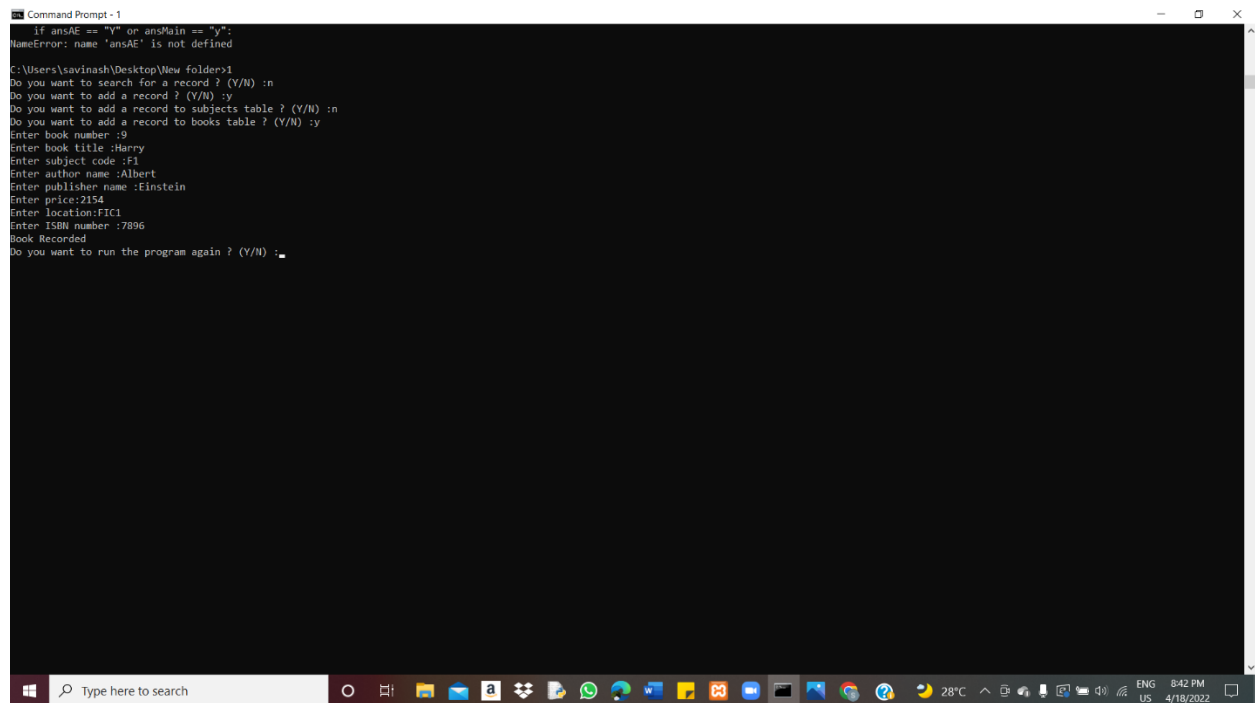
Figure 23 Test case

The screenshot shows the phpMyAdmin web interface. The main content area displays the 'books' table with the following data:

bookNo	bookTitle	subjectCode	author	publisher	price	location	isbn
1	Encyclopedia	S1	Plini	EduPub	2764.00	SC1	1765
5	The Bear	Lit	Anton Chekov	Pearson	1500.00	Lit	4375
9	Harry	F1	Albert Einstein	2154.00	FIC	7896	

The interface also shows a sidebar with a tree view of the database structure, including 'abcbookstore', 'books', 'chapters', 'subjects', 'information\_schema', 'mysql', 'performance\_schema', 'phpmyadmin', and 'test'. The bottom of the screen features a Windows taskbar with various application icons and system status indicators.

Figure 24 Test case



```

Command Prompt - 1
if ansAE == "Y" or ansMain == "y":
NameError: name 'ansAE' is not defined

C:\Users\savinash\Desktop\New folder>1
Do you want to search for a record ? (Y/N) :n
Do you want to add a record ? (Y/N) :y
Do you want to add a record to subjects table ? (Y/N) :n
Do you want to add a record to books table ? (Y/N) :y
Enter book number :9
Enter book title :Harry
Enter subject code :F1
Enter author name :Albert
Enter publisher name :Einstein
Enter price:2154
Enter location:FIC1
Enter ISBN number :7896
Book Recorded
Do you want to run the program again ? (Y/N) :
  
```

Figure 25 Test case

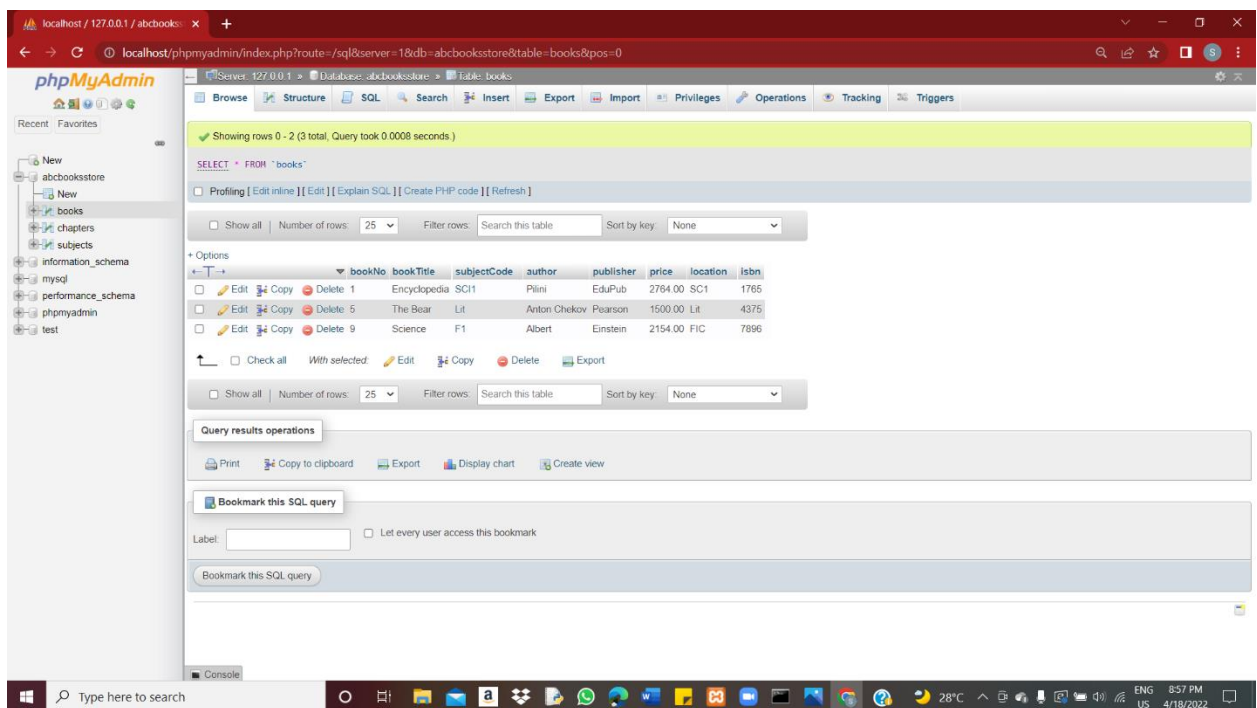


Figure 26 Test case