Software Engineering Class Fall 2020/2021
Project Report
Database Report

Central Library Organization and Management Software (CLOMS)

JULY 14

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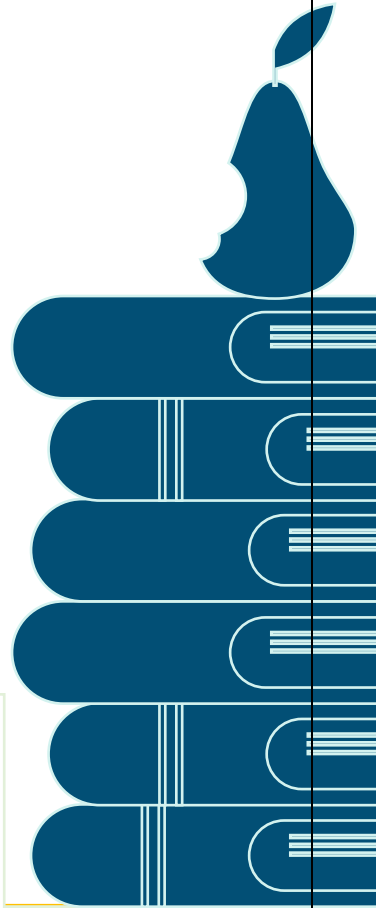-Sarah Gamal El Deen Mohamed.
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Breakdown of individual contributions:

Contributions of: *Sarah Gamal El-Deen Mohamed*

- Bookandresources class
- SetBookInfo function
- Lending function
- Getcomputeravailability function
- SearchEbook function
- sendRecommendation function
- BookandResources , lending data conceptual model
- Created BooksandResources , lending relational ables
- GUI

Contributions of: *Rana Mohamed Hussein*

- Member and employee classes
- Setmemberdata function
- Setemployeedata function
- Employee and member data conceptual model
- Created Employee and member relational tables.
- Created database in my sql work bench.
- GUI design

Contributions of: *Rahma Mohamed Makram*

- Internal computers class
- setInternalcomputer function
- setsession function
- getcomputeravailability function
- freecomputer function
- Internalcomputer ,ManagePayment data conceptual model
- GUI
- Created internalComputer , ManagePayment relational tables
- created database in my sql workbench

Contributions of: *Solwan Shokry Ahmed Mohamed*
• Member and visitor classes • Printmemberdata function • Setvistordata function • Login function • Visitor conceptual model • Created visitor, read relational tables • GUI design • Derby database and Database connection with netbeans

2. Data (Conceptual) Model:

a) Domain:

1. Books and Resources

Field	Data type	Constraints
BookNumber	INT	PRIMARY KEY
BookName	Varchar(30)	NOT NULL
AuthorName	Varchar(30)	NOT NULL
Price	INT	
Availability	INT	NOT NULL
Updated by	INT	Foreign key

2. Employee

Field	Data type	Constraints
ID	INT	PRIMARY KEY
FNAME	VARCHAR(20)	NOT NULL
LNAME	VARCHAR(20)	NOT NULL
SALARY	INT	
JOBDESCRIPTION	VARCHAR(20)	
WORKHOURS	INT	NOT NULL
PHONENUM	INT	

3. Members

Field	Data type	Constraints
M_ID	INT	FOREIGN KEY
MEMBERSHIPNUMBER	INT	PRIMARY KEY
INTRESETS	VARCHAR(35)	
MONTHLYPAYMENT	INT	
EMAIL	VARCHAR(20)	
E_ID	INT	FOREIGN KEY

4. Lending

Field	Datatype	Constraints
EmployeeID	INT	PRIMARY KEY
BookNumber	INT	PRIMARY KEY
MembershipNum	INT	PRIMARY KEY

5. Read

Field	Datatype	Constraints
VisitorID	INT	Primary key-Foreign key
Booknumber	INT	Primary key -Foreign key

6. Visitor

Field	Data type	Constraints
ID	INTEGER	PRIMARY KEY
NAME	VARCHAR(50)	NOT NULL
ADDRESS	VARCHAR(3700)	-
PHONENUMBER	INTEGER(10)	-
USERNAME	VARCHAR(20)	NOT NULL
PASSWORD	VARCHAR(20)	NOT NULL
E_ID	INT	FOREIGN KEY

7. Internal Computers

Field	Data type	constraints
State	Boolean	NOT NULL
SessionDuration	Int	NOT NULL
ipAddress	varchar	PRIMARY KEY
memberid	Int	Foreign key

8. ManagePayment

Field	Data type	Constraints
M_ID	INT	Foreign Key – primary key
MEMBERSHIP_NUMBER	INT	Foreign Key – primary key

Employee:

Internalcomputers:

Member :

Visitor :

b) Conceptual Data Model Diagram:
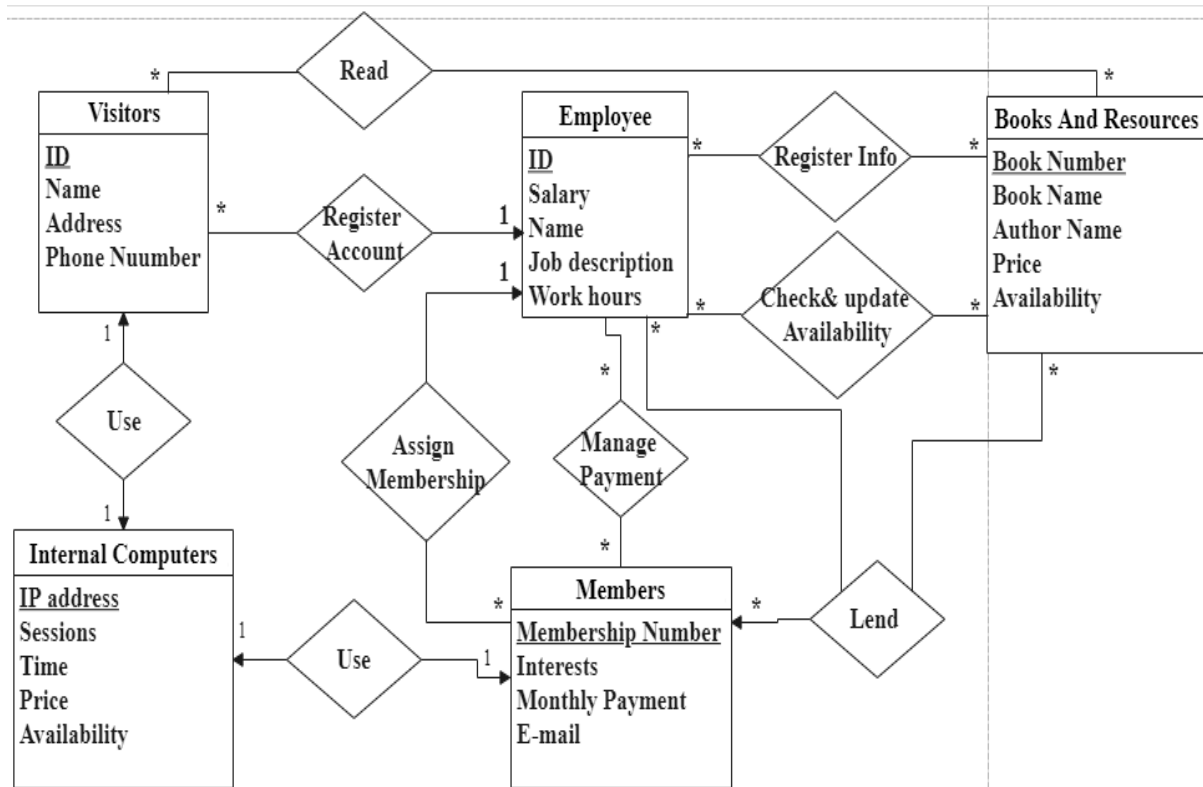
3. Logical and Physical Modelling:

Relational Scheme:

Employee

ID	FNAME	LNAME	SALARY	JOBDESCRIPTION	WORKHOURS	PHONENUM

Books and Resources

BOOKNUMBER	BOOKNAME	AUTHORNAME	PRICE	AVAILABILTY	UPDATEDBY

Visitors

V_ID	NAME	ADDRESS	PHONENUMBER	USERNAME	PASSWORD

Members

MID	MEMBERSHIPNUMBER	INTERESTS	MONTHLYPAYMENT	EMAIL	E_ID

InternalComputers

State	SessionDuration	ipAddress	memberid

ManagePayment

E_ID	Membership_Number

Read

VisitorID	BookNumber

lend

EmployeeID	BookNumber	MembershipNum
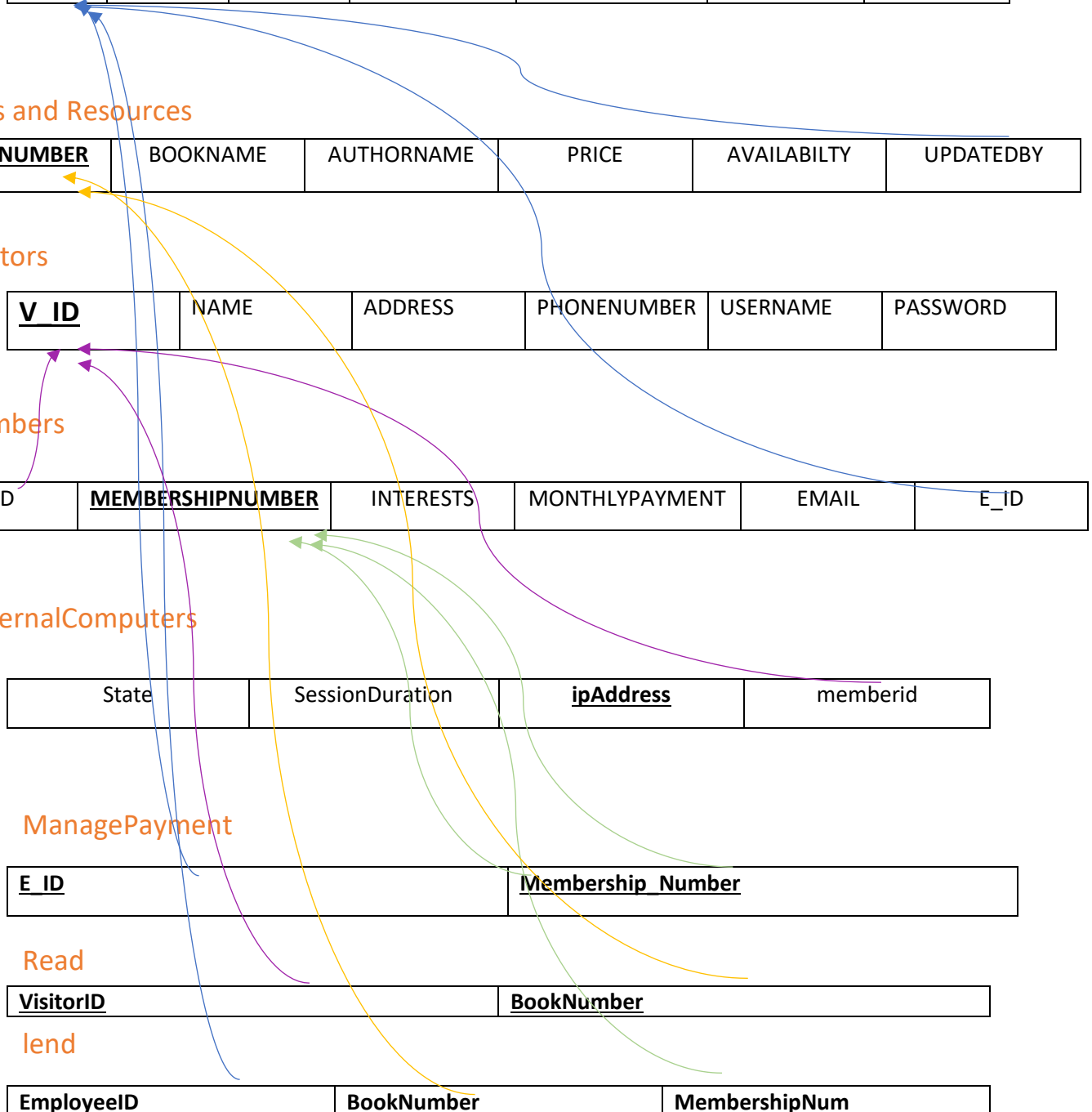
4 Database Implementation:

SQL statements:

1. Books and Resources:

```
CREATE TABLE BooksAndResources

(  BR_NUMBER int  NOT NULL ,

   BR_Name   varchar(30) NOT NULL,

   AuthorName  varchar(30)  NOT NULL,

   Price    int  NOT NULL,

   Availability  int NOT NULL ,

   updatedBy  INT  NOT NULL

);

ALTER TABLE BooksAndResources

ADD PRIMARY KEY (BR_NUMBER);

ALTER TABLE BooksAndResources

ADD FOREIGN KEY ( updatedBy)REFERENCES EMPLOYEE(ID);
```

2. Lending:

```
CREATE TABLE LENDING

(  EmployeeID INT  NOT NULL,

  BookNumber INT  NOT NULL,

   MembershipNum INT  NOT NULL  ,
```

```
);

ALTER TABLE LENDING

ADD PRIMARY KEY ( EmployeeID,BookNumber,MembershipNum);

ALTER TABLE LENDING

ADD FOREIGN KEY ( EmployeeID) REFERENCES EMPLOYEE(ID);

ALTER TABLE LENDING

ADD FOREIGN KEY (MembershipNum) REFERENCES MEMBER
(MEMBERSHIPNUMBER);

ALTER TABLE LENDING

ADD FOREIGN KEY (BookNumber) REFERENCES BooksAndResources
(BR_NUMBER);
```

3. Read:

```
CREATE TABLE READ_BOOK (

VisitorID INT    NOT NULL,

Booknumber INT   NOT NULL

);

ALTER TABLE READ_BOOK

ADD PRIMARY KEY (VisitorID, Booknumber);

ALTER TABLE READ_BOOK

ADD FOREIGN KEY ( VisitorID) REFERENCES VISITOR (V_ID);
```

```
ALTER TABLE READ_BOOK

ADD FOREIGN KEY ( Booknumber) REFERENCES BooksAndResources

(BR_NUMBER);
```

4. Employee:

```
CREATE TABLE EMPLOYEE (

ID  INT  NOT NULL,

FNAME VARCHAR(20)  NOT NULL,

LNAME  VARCHAR(20)  NOT NULL,

SALARY  INT,

JOBDESCRIPTION VARCHAR(20)  NOT NULL,

WORKHOURS INT NOT NULL,

PHONENUM INT

CHECK(SALARY>=500),

CHECK(WORKHOURS>=8)

 );

ALTER TABLE EMPLOYEE

ADD PRIMARY KEY (ID) ;
```

5. Visitors:

```
CREATE TABLE VISITOR (

V_ID INTEGER NOT NULL,

V_NAME VARCHAR(50) NOT NULL,

ADDRESS VARCHAR (3700),
```

```sql
PHONENUMBER INTEGER,

USERNAME VARCHAR(20) NOT NULL,

PASSWORD VARCHAR(20) NOT NULL.

E_ID INT NOT NULL

 );

ALTER TABLE VISITOR

ADD PRIMARY KEY(V_ID);

ALTER TABLE VISITOR

ADD FOREIGN KEY(E_ID) REFERENCES EMPLOYEE(ID);
```

6. <u>Members:</u>

```sql
CREATE TABLE MEMBER (

M_ID INT NOT NULL,

MEMBERSHIPNUMBER INT NOT NULL ,

INTERESTS  VARCHAR(30),

MONTHLYPAYMENT  INT NOT NULL ,

EMAIL VARCHAR(20),

E_ID INT NOT NULL

);

ALTER TABLE MEMBER

ADD PRIMARY KEY (MEMBERSHIPNUMBER) ,

ADD FOREIGN KEY (M_ID) REFERENCES VISITOR (V_ID),
```

ADD FOREIGN KEY (E_ID) REFERENCES EMPLOYEE (ID);

7. InternalComputers

```
CREATE TABLE InternalComputers (

State Boolean NOT NULL,

SessionDuration INT,

IpAddress VARCHAR (30),

memberid INT NOT NULL

);

ALTER TABLE INTERNALCOMPUTERS

ADD PRIMARY KEY (ipAddress);

ALTER TABLE INTERNALCOMPUTERS

ADD FOREIGN KEY (memberid) REFERENCEs VISITOR (V_ID);
```

8. ManagePayment

```
CREATE TABLE ManagePayment (

M_ID INT NOT NULL,

MEMBERSHIP_NUMBER INT NOT NULL

E_ID NOT NULL

);

ALTER TABLE ManagePayment

ADD PRIMARY KEY (E_ID,M_NUMBER)

ALTER TABLE ManagePayment

ADD FOREIGN KEY (E_ID) REFERENCES EMPLOYEE (ID),
```

```
ALTER TABLE ManagePayment

ADD FOREIGN KEY (M_NUMBER) REFERENCES MEMBER

(MEMBERSHIPNUMBER);
```

```
INSERT INTO employee VALUES (2000, Mary, Henry, 3000,

Receptionist, 8, 001120);


INSERT INTO internalcomputers VALUES (1, 1,"128.0.0.1,3000);


INSERT INTO lending VALUES(2000,1,1);


INSERT INTO managepayment VALUES(3000,1,2000);


INSERT INTO member VALUES

(3000,1,"politics",200,"name@mail.com" ,2000);


INSERT INTO visitor VALUES(3000,"Suzi Choi", "South Korea",

0011222333, "suzi", 3000, 200);


INSERT INTO read (3000,1);


INSERT INTO booksandresources VALUES (1,"", "", 80, 1,2000);
```

5. Application Implementation

1.SartUP Page:

Inputs: in UserName text field : Employee.USERNAME="cloms"
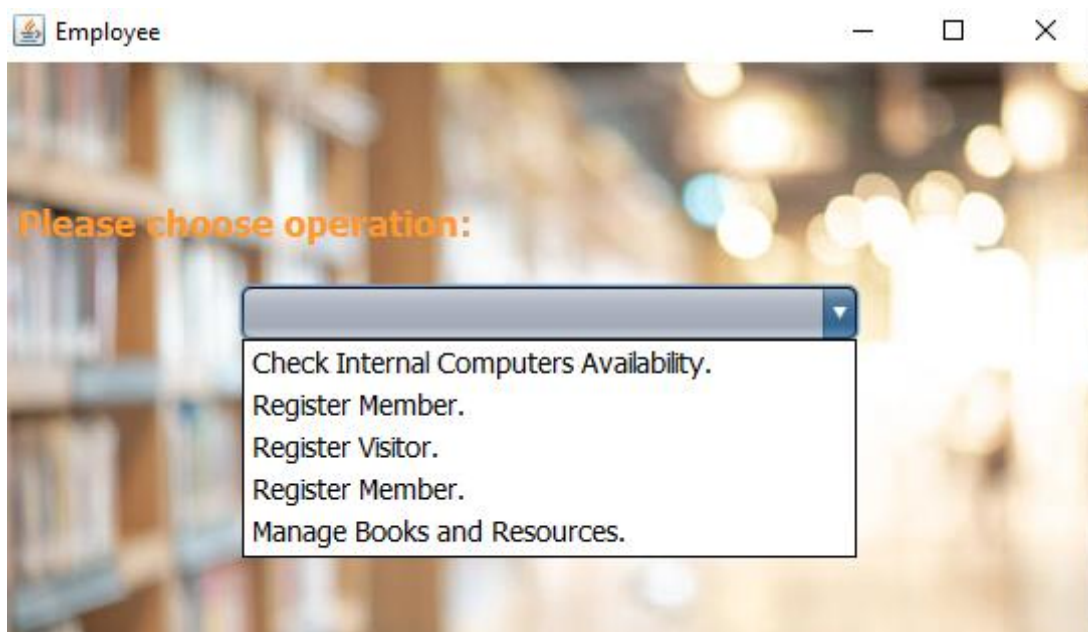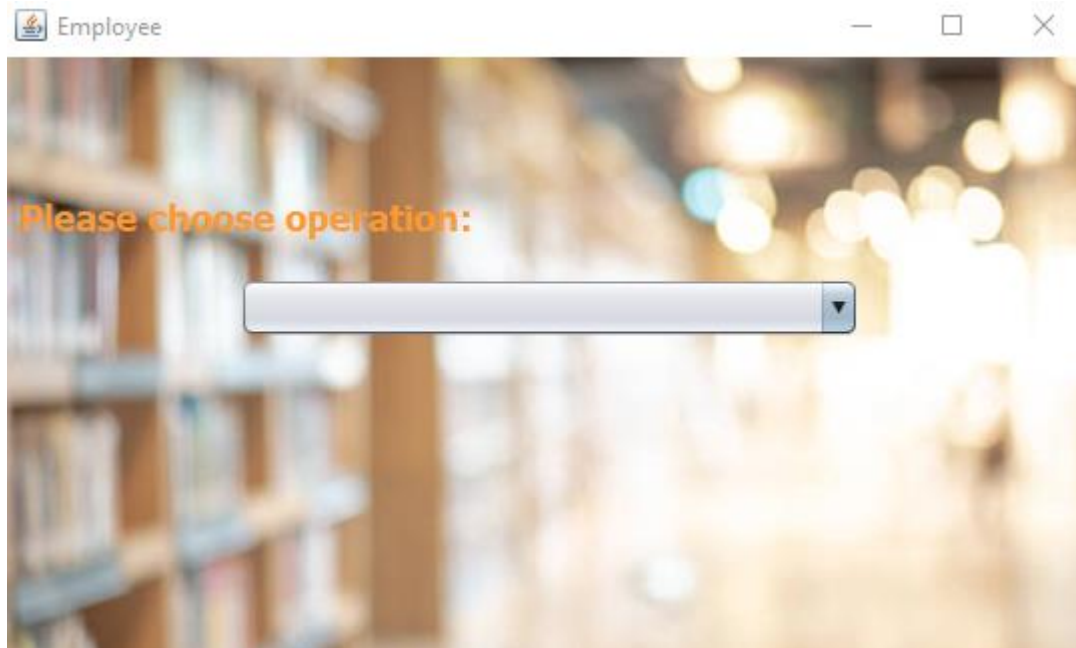
in Password text field : Employee.Password= "1234"

in UserName text field : Member.USERNAME="rana"

in Password text field : Member.Password= "306"
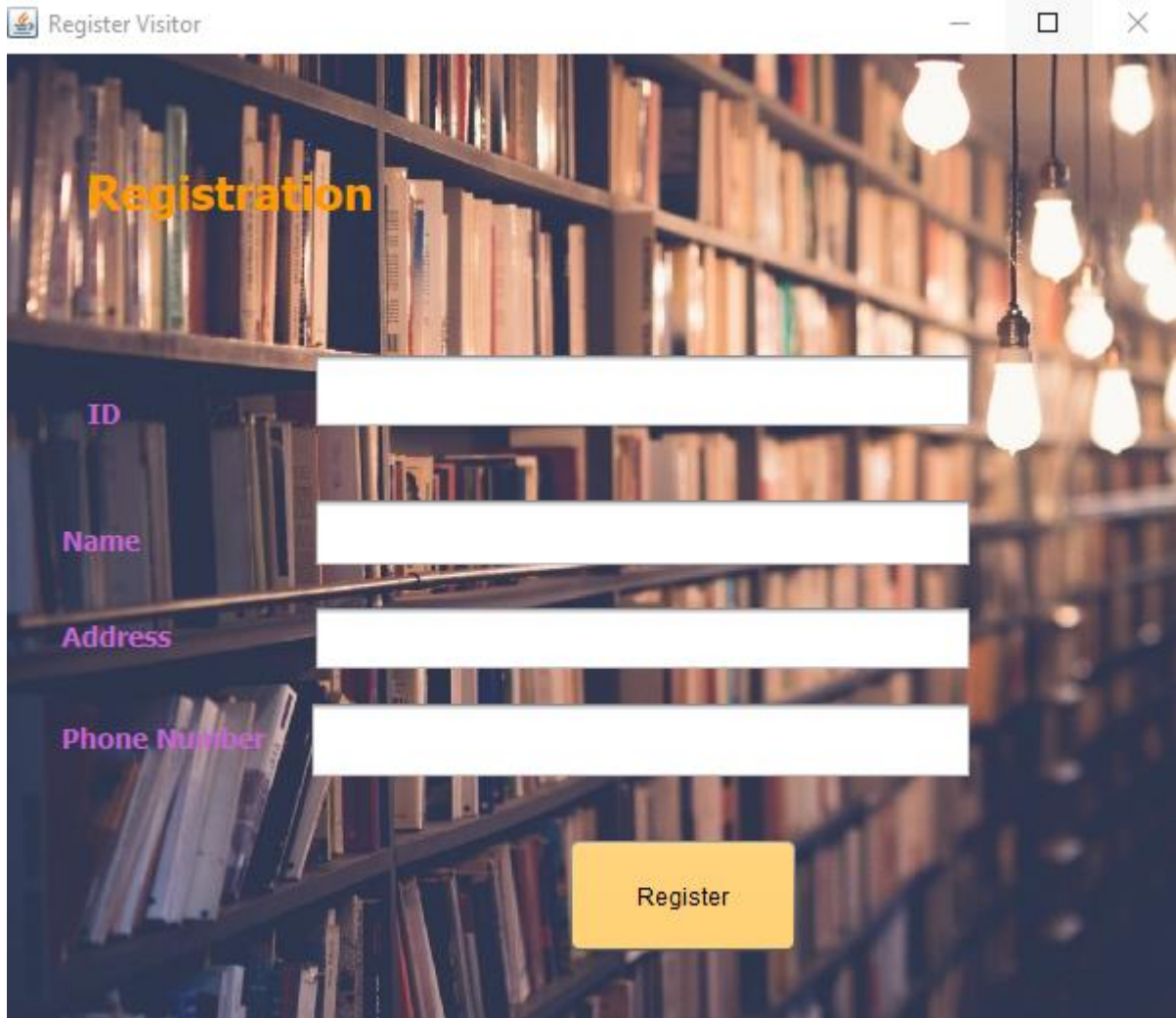
2.Employee Window:

Input:

Choose Register visitor window

3. Register Visitor Window

Input

In ID text field: Visitor.V_ID= 3006

In Name text field Visitor.V_NAME="Mark"

In Address text field Visitor.ADRESS= "Lee"

In Phone Number text field Visitor.PHONENUMBER=0112223344

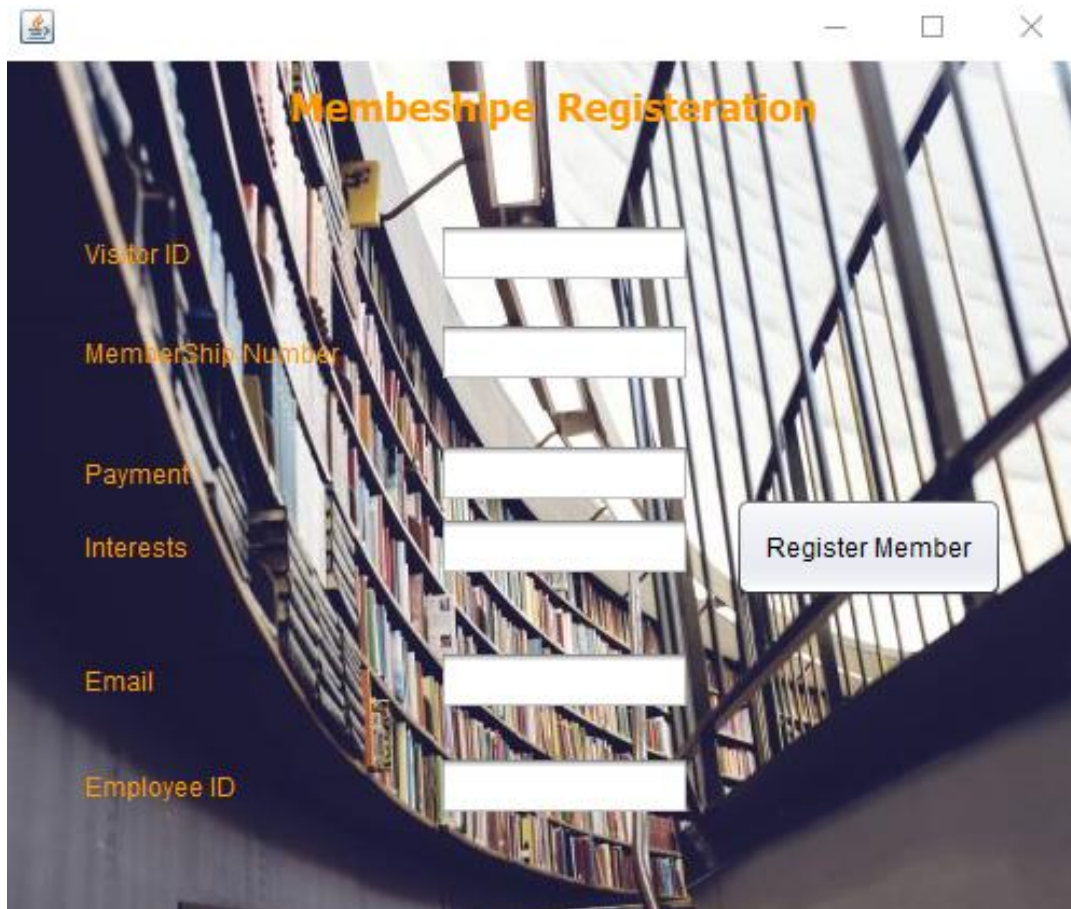# Registration

ID 3009

Name Mark

Address Lee

Phone Number 0112223344

Register

4.Member Registration

Input:

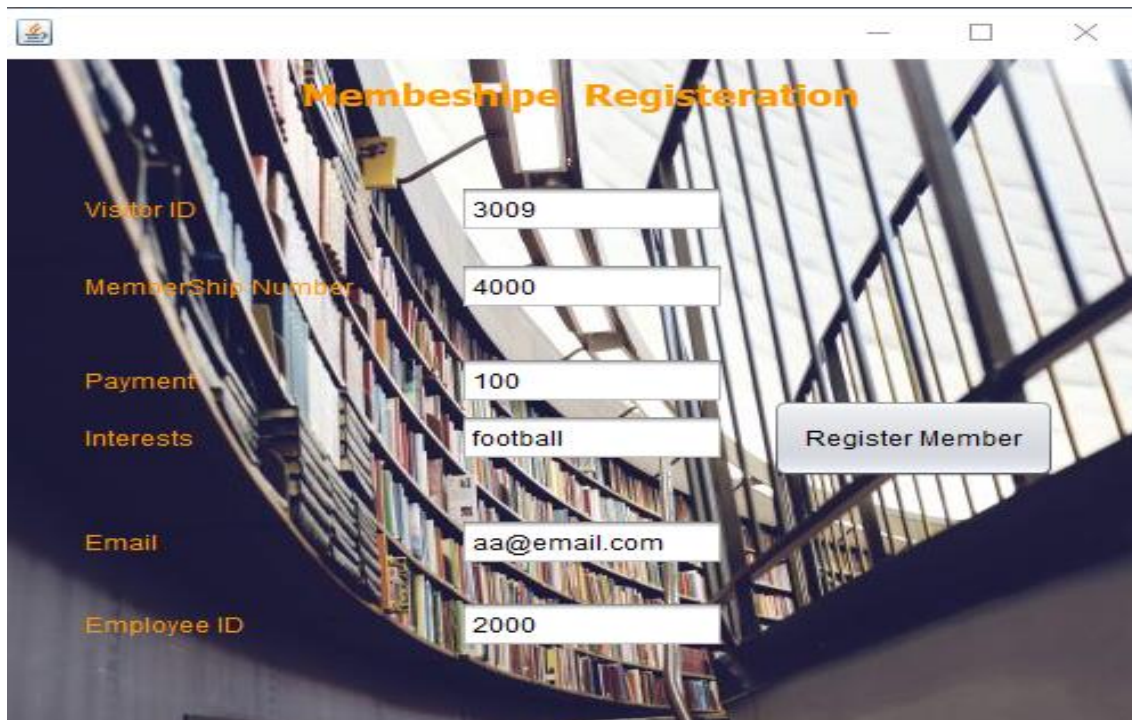In Visitor ID text field: Member.M_ID=3009

In MemberShip Number text field: Member.MEMBERSHIPNUMBER=4000

In Payment text field: Member.MONTHLYPAYMENT=100

In Interests text field: Member.INTERESTS=football

In Email text field: Member.EMAIL=aa@email.com

In Employee ID text field: Member.EE_ID=2000

Membeshipe Registeration

Visitor ID   3009

MemberShip Number   4000

Payment   100

Interests   football   Register Member

Email   aa@email.com

Employee ID   2000
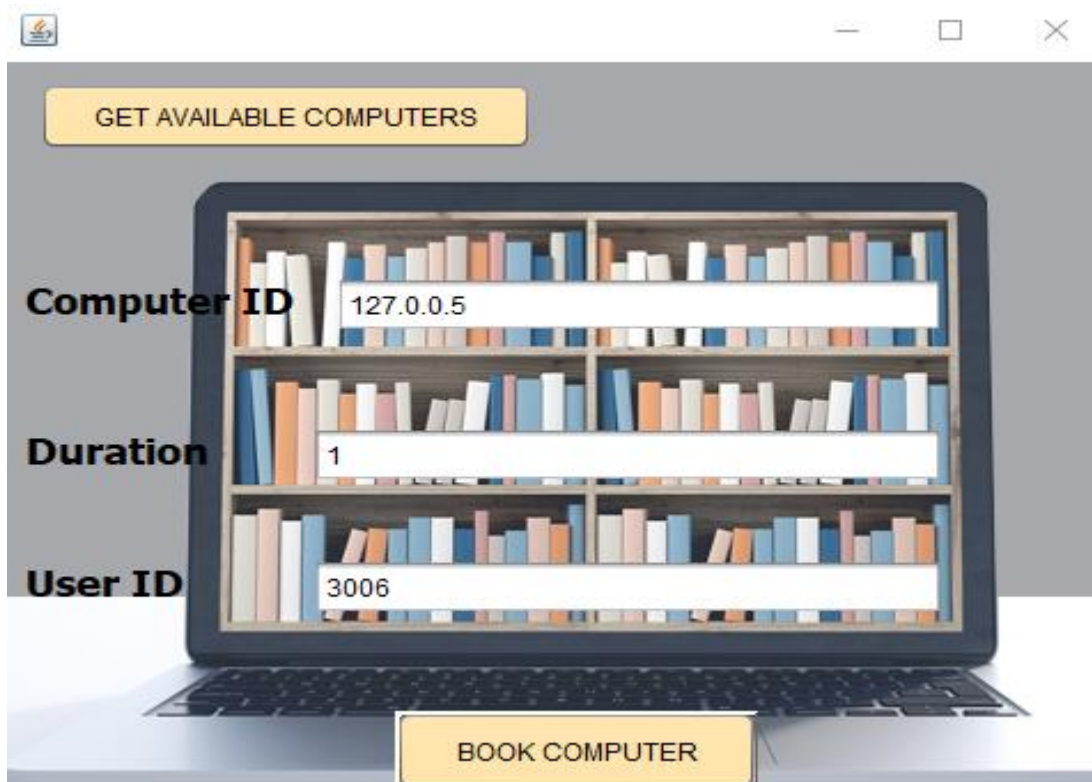
4. Check Computers Availability Window:
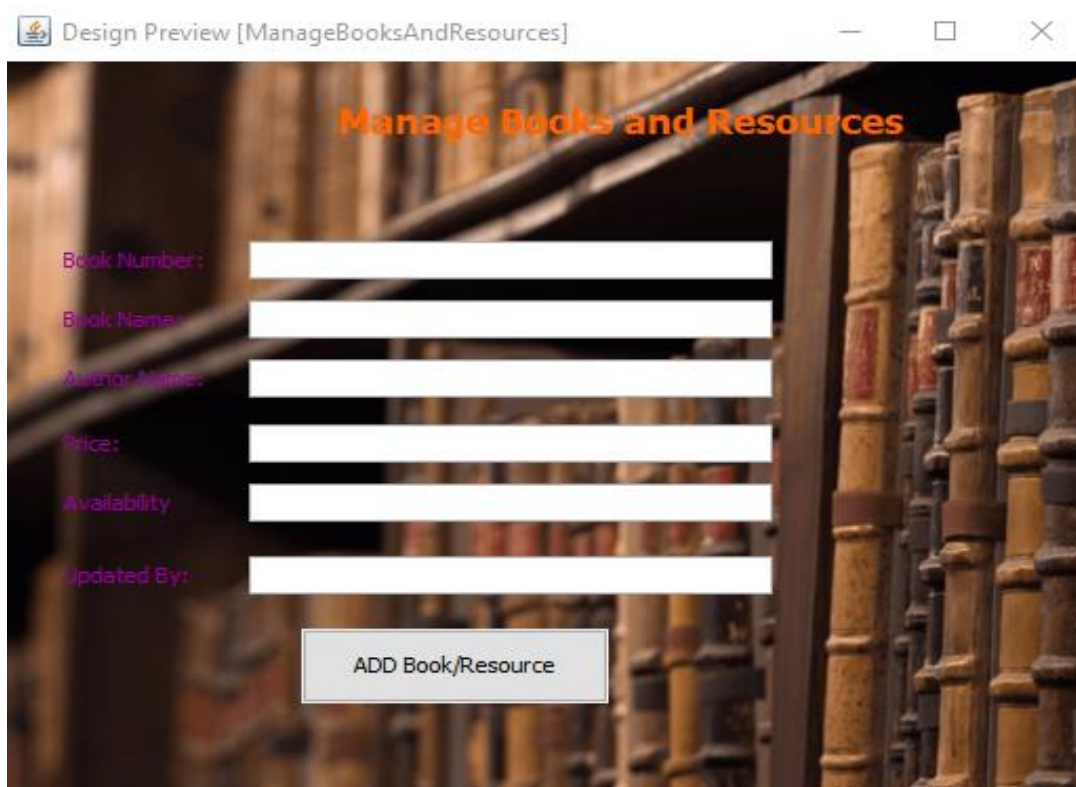

Input:

In Computer ID text field: InternalComputers.IPADDRESS=127.0.0.5

In Duration text field: InternalComputers.SESSIONDURATION=1

In user ID text field: InternalComputers.USERID=3006

4. Manage Books And Resources:

Input:

In Book Number text field: BooksAndResources.BR_NUM=300

In Book Name text field: BooksAndResources.BR_NAME=Weathering Heights

In Author Name text field: BooksAndResources.AuthorName=E.A

In Price text field: BooksAndResources.Price=200

In Availability text field: BooksAndResources. Availability =1

In Updated By text field: BooksAndResources. updatedBy =2000

5. Members Window