



# **COMP 213 MISS ASMA BASHARAT DATABASE PROJECT**

## **Group Members:**

Muhammad Muzammil	231-485432
Hatib Zubair	241-547206
Maheen Hamayun	241-551781
Izhan	22 - 10188

## **Project Title and Description:**

The title of our project is Library management system. The system keeps track of the books/student/staff with a single point authentication system comprising login Id and password. This Database System helps the librarian to maintain the database of new books and the books that are borrowed by members along with their due dates.

### **Functional Requirements:**

1. The system allows the user with valid id and password to enter the system.
2. The system performs an authorization process which decides what user level can access to.
3. The user must be able to logout after they finished using the system.
4. System must be able to verify information.
5. System must be able to delete information if information is wrong.
6. System must be able to enter no. of copies into table.
7. System must not be able to not allow same book id to two books.
8. System must be able to search database based on select search type,
9. System must be able to filter book based on keyword entered.
10. System must be able to show the filtered book in table view.
11. The system must be able to update the number of books.
12. System must be able to search if book is available or not before issuing books.
13. System must be able to enter issue and return date information.

### **Entities and Attributes:**

The Following entities will include the following attributes:

#### **1. Admin/Staff**

- First Name
- Last Name
- Password
- Username
- Email
- Phone

#### **2. Student**

- First name
- Last Name
- Password

- Username
- Email
- Phone
- Picture
- DOB
- Age

### **3. Report**

- Username
- BookID
- Registration No.
- Issue Date
- Return Date
- Delay Fine

#### **Book**

- Title
- Genre
- BookID
- ISBN
- Author
- Edition
- Price

#### **Publisher**

- PublisherID
- Address
- Name

#### **Authentication**

- Username
- Password
- OTP verification

#### **Bookcopies**

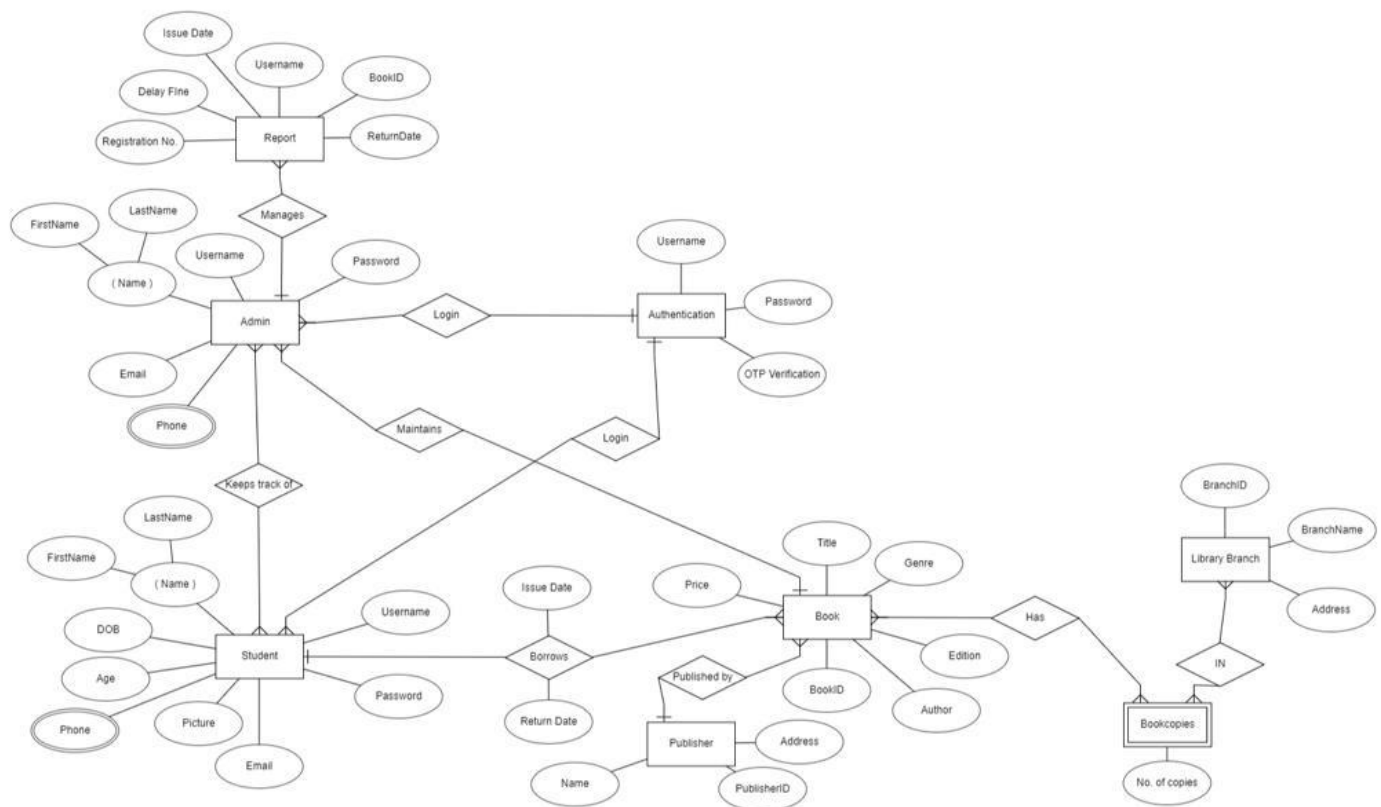
- No. of copies

## Library Branch

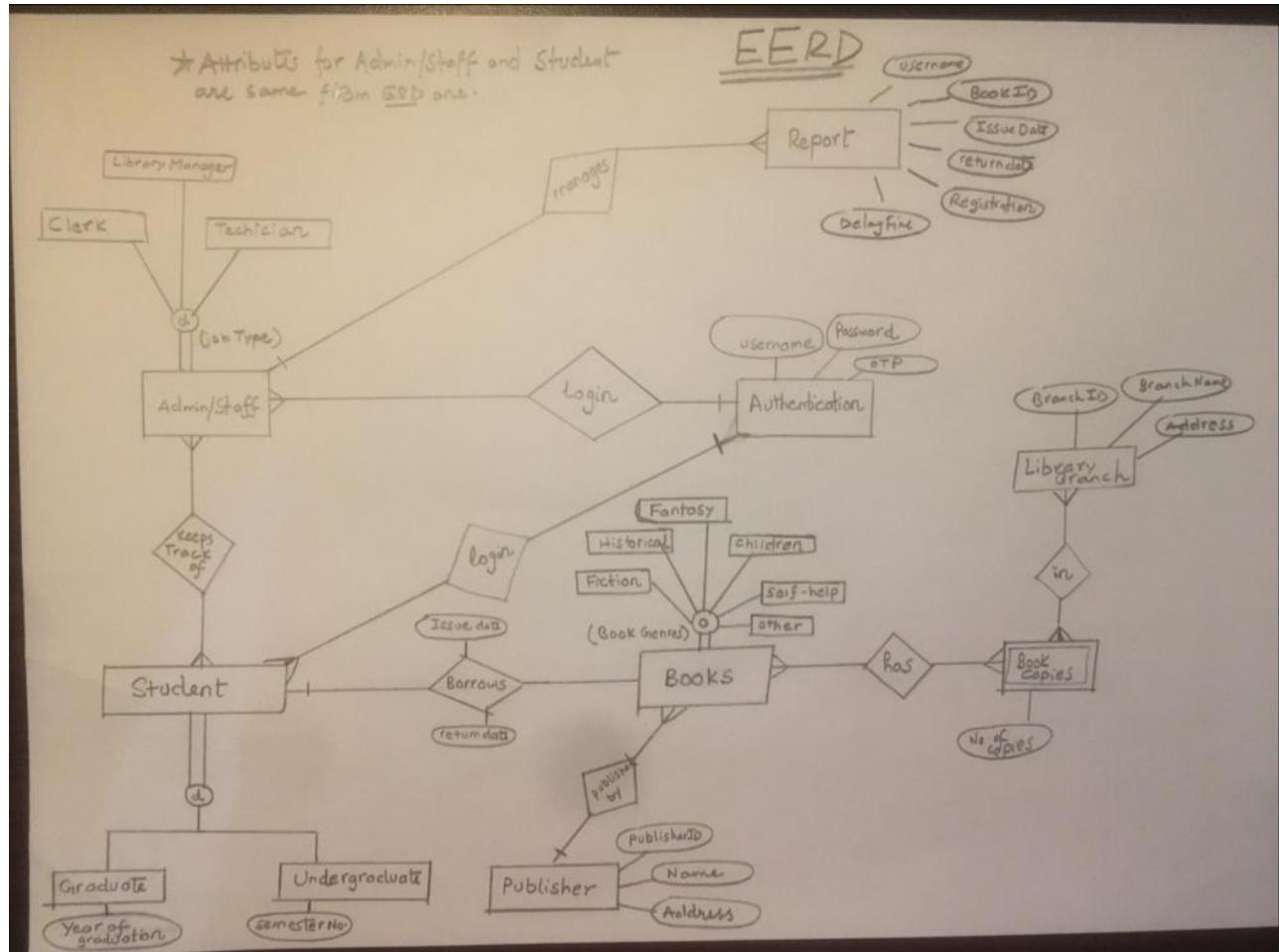
- Address
- Branch Name
- BranchID

**Note:** The underlined attributes are primary keys.

## ERD:



## EERD



## ERD TO RM MAPPING/ RELATIONAL MODEL

### **Admin**

First Name	Last Name	Password	<u>Ausername</u>	Email	Phone Number
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### **Student**

First Name	Last Name	Password	<u>Susername</u>	Email	Phone Number	Picture	DOB	Age
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### **Report**

Username	<u>Book ID</u>	Registration	Issue Date	Return Date	Delay Fine	<u>ISBN</u>
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### **Authentication**

<u>Username</u>	Password	OTP Verification	Ausername	Susername
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### **Book**

Title	Genre	<u>Book ID</u>	<u>ISBN</u>	Author	Edition	Price	Susername	PublisherID	Ausername
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### **Publisher**

<u>PublisherID</u>	Address	Name
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### **Bookcopies**

No. of Copies	Book ID	ISBN	Branch ID
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### Library Branch

Address	Branch Name	<u>Branch ID</u>
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### Keeps Track of

<u>Ausername</u>	<u>Susername</u>
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### B\_Has\_C

<u>BookID</u>	<u>ISBN</u>
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### B\_In\_L

<u>Branch ID</u>
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### Borrow\_return

<u>Susername</u>	<u>BookID</u>	<u>ISBN</u>	Return Date	Issue Date
------------------	---------------	-------------	----------------	---------------

## NORMALISATION TO 3NF:

Admin:

First Name    Last Name    Password    Ausername    Email    Phone no.

It is already in 3NF (All attributes dependants of Ausername)

Ausername    First Name    Last Name    Password    Email    Phone no.

Student:

First Name    Last Name    Password    Susername    Email    Phone no.    Age  
Pictures    DOB

already in 3rd NF (All attributes dependants of Susername)

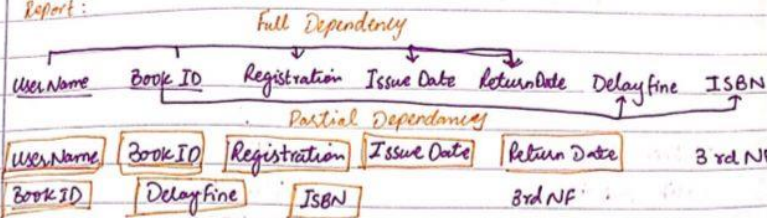
Susername    First Name    Last Name    Password    Email    Phone no.    Age    Pictures  
DOB

EASE

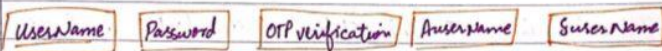
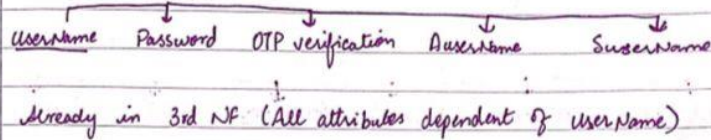
Scanned with CamScanner



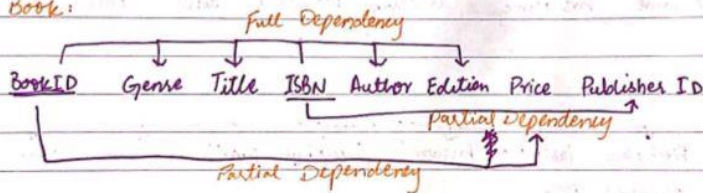
Report:



Authentication:



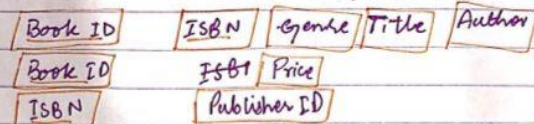
Book:



→ Genre, Title, Author, Edition are dependants of BookID

→ Price is dependant of Book ID

→ Publisher ID is dependant of ISBN



Publishers:

PublisherID Address Name

Already in 3rd NF.

Book copies:

BookID ISBN BranchID No. of copies

BookID BranchID No. of copies

BookID ISBN

Library Branch:

BranchID BranchName Address

Already in 3rd NF.

Borrow Pattern:

User Name BookID ISBN Return Date Issue Date

EASE

Scanned with CamScanner

Date: \_\_\_\_\_

User Name BookID Return Date Issue Date 3NF

BookID ISBN 3NF

Keeps Track of, B-His-C, B-In-L  
relations already in 3NF

## QUERIES (SQL SCREENSHOTS) :

```
CREATE VIEW StudentDetails AS
SELECT Students.Firstname, Students.LastName, Report.Book_Id, Report.Issue_date
FROM Students, Report
WHERE Students.S_username = Report.S_username;

SELECT * FROM StudentDetails
```

90 %

Results Messages

	Firstname	LastName	Book_Id	Issue_date
1	Asif	Amir	42	2022-06-20
2	Asif	Amir	213	2022-06-23
3	Zainab	Jawad	301	2022-06-22
4	Muhammad	Qasim	301	2022-06-14

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```
CREATE VIEW BookDetails AS  
SELECT Book_copies.Book_ID, Book_copies.No_of_Copies, Library_Branch.Address  
FROM Book_copies, Library_Branch  
WHERE Book_copies.Branch_Id = Library_Branch.Branch_Id
```

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```
SELECT * FROM BookDetails
```

90 %

Results Messages

	Book_ID	No_of_Copies	Address
1	42	6	41 Z BLOCK DEFENCE
2	42	13	116-B GULBERG III
3	42	14	91-X WAPDA TOWN
4	6	14	91-X WAPDA TOWN
5	6	14	116-B GULBERG III
6	6	14	41 Z BLOCK DEFENCE
7	49	14	91-X WAPDA TOWN
8	49	14	116-B GULBERG III
9	49	12	41 Z BLOCK DEFENCE
10	69	17	91-X WAPDA TOWN
11	69	11	116-B GULBERG III
12	69	19	41 Z BLOCK DEFENCE
13	100	6	91-X WAPDA TOWN
14	100	8	116-B GULBERG III
15	100	7	41 Z BLOCK DEFENCE
16	121	11	41 Z BLOCK DEFENCE
17	121	18	116-B GULBERG III
18	121	12	91-X WAPDA TOWN
19	157	16	41 Z BLOCK DEFENCE



```
CREATE VIEW BookDetail AS  
SELECT Book.Author, Book.Title, Book_3.Book_Id, Book_3.Publisher_ID  
FROM Book, Book_3  
WHERE Book.Book_Id = Book_3.Book_Id
```

```
SELECT * FROM BookDetail
```

90 %

Results Messages

	Author	Title	Book_Id	Publisher_ID
1	Charles Dickens	Oliver Twist	213	3000
2	Stephen R. Covey	The 7 Habits of Highly Effective People	6	1000
3	Dr Seuss	Green Eggs	42	2000
4	Bill O'Reilly	Killing England	49	4000
5	Ta Nehisi	The Water Dancer	69	4000
6	Shirley Jackson	Haunting of the Hill House	100	5000
7	J.K. Rowling	Harry potter	121	5000
8	Harper Lee	To kill a Mockingbird	157	3000
9	Michelle Obama	Becoming	173	2000
10	H.G. Wells	The Time Machine	301	5000

server 15.0.20

```
CREATE VIEW BookPrice AS
SELECT Book.Title, Book.Genre, Book_2.Price
FROM Book, Book_2
WHERE Book.Book_Id = Book_2.Book_Id

SELECT * FROM BookPrice
```

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Results Messages

	Title	Genre	Price
1	The 7 Habits of Highly Effective People	Self-Help	2000
2	Green Eggs	Children	700
3	Killing England	Historical	1050
4	The Water Dancer	Fantasy	1500
5	Haunting of the Hill House	Horror	500
6	Harry potter	Fiction	250
7	To kill a Mockingbird	Fiction	620
8	Becoming	Autobiography	2100
9	Oliver Twist	Fiction	400
10	The Time Machine	Fiction	3000

✓ Query executed successfully.



```
CREATE VIEW OTP AS  
SELECT Staff.FirstName, Staff.LastName, Authentication_1.OTP_verification  
FROM Staff, Authentication_1  
WHERE Staff.A_Username = Authentication_1.A_Username  
  
SELECT * FROM OTP
```

90 %

Results Messages

	FirstName	LastName	OTP_verification
1	Shahid	Ahmed	5491
2	Muhammad	Ahmed	7650
3	Shaheen	Shah	4019
4	Babar	Azam	2184
5	Muhammad	Rizwan	9043



Execute

231485432\_Muzamm...I - not connected 231485432\_Muzamm...I - not connected

```
SELECT Students.FirstName, Students.LastName, Report.Book_Id
FROM Students
INNER JOIN Report
ON Students.S_username = Report.S_username
```

90 %

Results Messages

	FirstName	LastName	Book_Id
1	Asif	Amir	42
2	Asif	Amir	213
3	Zainab	Jawad	301
4	Muhammad	Qasim	301



```
SELECT Book_copies.Book_ID, Book_copies.No_of_copies, Library_Branch.Branch_Name  
FROM Book_copies  
LEFT JOIN Library_Branch  
ON Book_copies.Branch_Id = Library_Branch.Branch_Id  
Where (No_of_copies > 14)
```

Results Messages

Book_ID	No_of_copies	Branch_Name
69	17	WAPDA TOWN BRANCH
69	19	DEFENCE BRANCH
121	18	GULBERG BRANCH
157	16	DEFENCE BRANCH
157	15	GULBERG BRANCH
213	21	GULBERG BRANCH
301	17	DEFENCE BRANCH
301	27	WAPDA TOWN BRANCH

```
SELECT Book.Book_Id, Book.Title, Book_3.Publisher_ID  
FROM Book  
RIGHT JOIN Book_3  
ON Book.Book_Id = Book_3.Book_Id  
WHERE Publisher_ID = 4000
```

90 %

Results Messages

	Book_Id	Title	Publisher_ID
1	49	Killing England	4000
2	69	The Water Dancer	4000

```

SELECT Authentication_1.A_username, Authentication_1.Password, Authentication_2.S_username, Authentication_2.Password
FROM Authentication_1
FULL OUTER JOIN Authentication_2
ON Authentication_1.OTP_verification = Authentication_2.OTP_verification

```

	A_username	Password	S_username	Password
1	S Ahmed	qwer321	NULL	NULL
2	M Ahmed	kljk456	NULL	NULL
3	eagle13	afndi23	NULL	NULL
4	Bobby123	cover60	NULL	NULL
5	Riz_super	rizthebest	NULL	NULL
6	NULL	NULL	mqasim	mqasim14
7	NULL	NULL	Asiddiq201	A.siddiq76
8	NULL	NULL	shahahmad94	shahamd9000
9	NULL	NULL	A.Amir899	asifamir6990
10	NULL	NULL	Ayesha007	Ayesha1021

```

SELECT Firstname, LastName, Phone_Number FROM Staff
UNION ALL
SELECT Firstname, LastName, Phone_Number FROM Students
ORDER BY Phone_Number

```

	Firstname	LastName	Phone_Number
1	Muhammad	Ahmed	300978
2	Shahid	Ahmed	300987
3	Anwar	Khan	308903
4	Ali	Khalid	312983
5	Ahmed	Khan	1234567
6	Babar	Azam	3004235
7	Hina	Pervaiz	3008432
8	Ali	Siddiq	3009487
9	Ayesha	Irfan	3016383
10	Muhammad	Saqib	3018466
11	Haider	Malik	3037589
12	Muhammad	Rizwan	3049438
13	Asif	Amir	3062565
14	Muhammad	Muzamil	3115378
15	Rao	Mubeen	3116475
16	Muhammad	Mudassir	3214578
17	Hassaan	Ahmad	3214708
18	Shahmeer	Ahmad	3216548
19	Musa	Khokhar	3234231
20	Masoom	Ahmed	3237723
21	Hamza	Ali	3254780
22	Shaheen	Shah	3321764
23	Mustafa	Saeed	3324398
24	Muhammad	Qasim	3354345
25	Syed	Qasim	3354987
26	Ali	Hassan	3402784
27	Mahnoor	Dar	3417485
28	Ali	Dogar	3422451
29	Zainab	Jawad	30382934