

PES UNIVERSITY
Department of Computer Science & Engineering



DBMS - UE20CS301
Mini Project
Library Management System

Submitted to:

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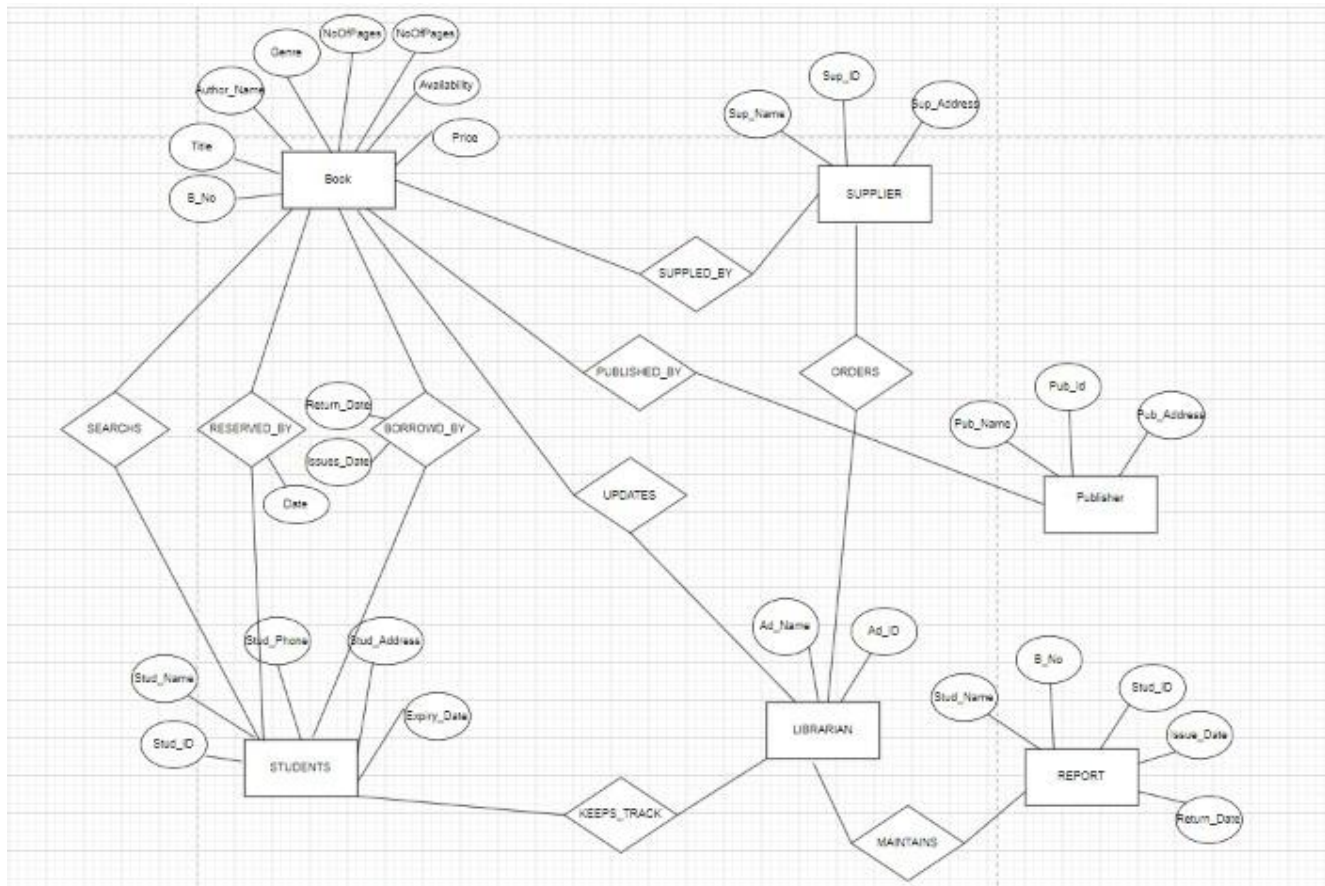
1. Short Description and Scope of the Project

Database management systems help a great deal for Libraries to manage large amounts of information and to perform transactions on such large amounts of data. They reduce manual efforts hence enhance the quality of information retrieval services. Using this product, Libraries can keep track of numerous books along with all their details like author name, genre, series name, number of pages and publisher. Along with this the librarian can also keep track of users, books that were issued, due dates etc. Librarians will also be able to modify the details of the books like restock, worn out copies and new books whenever required. User details are also maintained (user name, gender, phone number, address). Users will be able to search books and view the book details of each book.

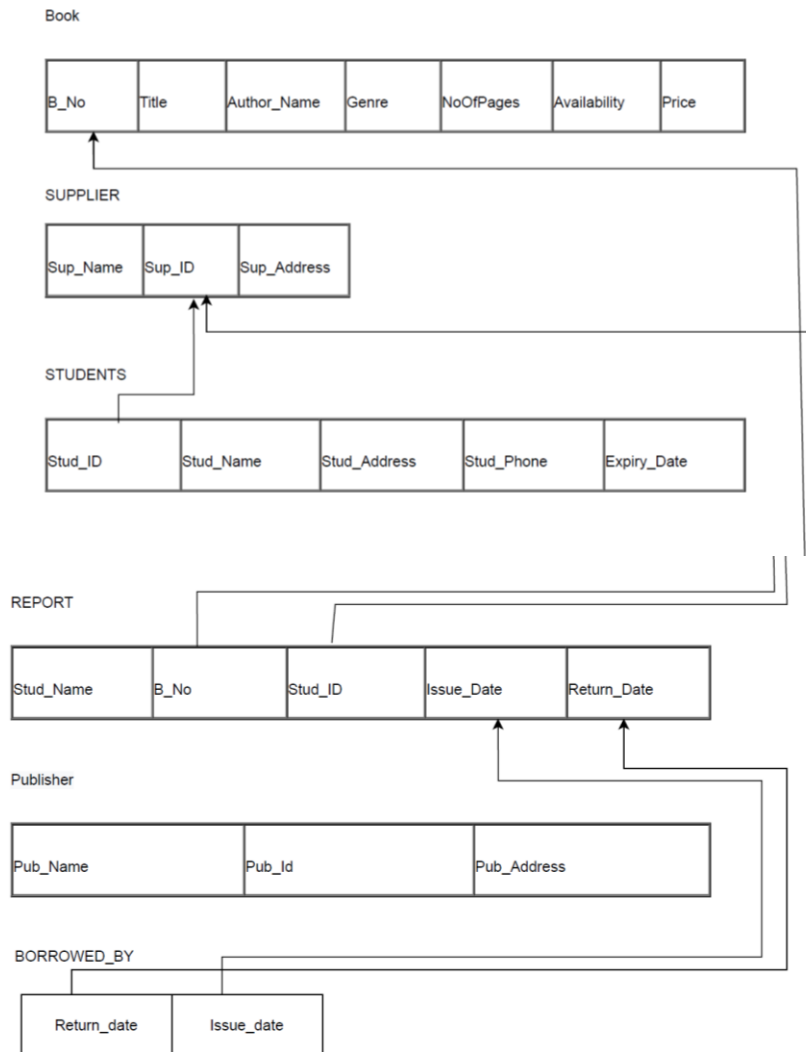
Project Scope:

- To have an application that secures data records.
- To have an application that keeps track of books issued, due dates and related details in a simple format.
- To have an application that reduces the errors and efforts of the librarian.
- To have an application that can track the user activities
- The application shall have a login page for allowing only authorized users to access the application.

2. ER Diagram



3. Relational Schema



4. DDL statements - Building the database

- Creating Table named Books

```
CREATE TABLE `books` (  
  `b_no` int(5) NOT NULL,  
  `title` varchar(40) DEFAULT NULL,  
  `author_name` varchar(30) DEFAULT NULL,  
  `genre` varchar(20) DEFAULT NULL,  
  `description` varchar(20) DEFAULT NULL,  
  `publisher` varchar(20) DEFAULT NULL,  
  `copies` int(5) NOT NULL,  
  `availability` boolean(5) NOT NULL  
) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4;
```

- Creating Table named Studs

```
CREATE TABLE `studs` (  
  `stud_id` varchar(10) NOT NULL,  
  `stud_name` varchar(20) NOT NULL,  
  `stud_phone` int(12) NOT NULL,  
  `stud_address` varchar(30) NOT NULL,  
  `expiry_date` date(10) NOT NULL  
) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4;
```

- Creating Table named Librarian

```
CREATE TABLE `lib`.`librarian` (  
  `lib_name` varchar(20) NOT NULL,  
  `lib_id` varchar(10) DEFAULT NULL  
)
```

- Creating Table named Reports

```
CREATE TABLE `reports` (  
  `stud_name` varchar(20) DEFAULT NULL,  
  `b_no` varchar(5) DEFAULT NULL,  
  `stud_id` varchar(10) DEFAULT NULL,  
  `issue_date` date(10) DEFAULT NULL,  
  `return_date` date(10) DEFAULT NULL  
) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4;
```

- Creating Table named Publisher

```
CREATE TABLE `lib`.`publisher` (  
  `pub_name` varchar(20) NOT NULL,  
  `pub_id` varchar(10) DEFAULT NULL,  
  `pub_address` varchar(30) DEFAULT NULL  
); ENGINE=InnoDB DEFAULT CHARSET=utf8mb4;
```

- Creating Table named Issues_Status

```
CREATE TABLE `issue_status` (  
  `issue_id` varchar(10) NOT NULL,  
  `issued_book_name` varchar(40) DEFAULT NULL,  
  `issued_book_no` varchar(5) DEFAULT NULL,  
  `issued_date` date(10) NOT NULL,  
  `issued_stud` varchar(10) NOT NULL,  
  PRIMARY KEY (issue_id),  
  CONSTRAINT FOREIGN key (issued_book_no) REFERENCES books(b_no),  
  CONSTRAINT FOREIGN key (issued_book_name) REFERENCES books(title),  
  CONSTRAINT FOREIGN KEY (issued_stud) REFERENCES student(stud_id)  
) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4;
```

5. Populating the Database

- Table – Books

```
INSERT INTO `` (`num`,`title`,`genre`,`des`,`author`,`publisher`,`availability`,`copies`)  
VALUES (10001,'Harry Potter and the philosopher\'s stone','fantasy','Harry Potter, an  
eleven-year-old orphan, discovers that he is a wizard and is invited to study at  
Hogwarts.','J K Rowling',' Bloomsbury (UK)','Yes',13);
```

```
INSERT INTO `` (`num`,`title`,`genre`,`des`,`author`,`publisher`,`availability`,`copies`)  
VALUES (10002,'Harry Potter and the chamber of secrets','fantasy','A house-elf warns  
Harry against returning to Hogwarts, but he decides to ignore it. ','J K Rowling','  
Bloomsbury (UK)','Yes',12);
```

```
INSERT INTO `` (`num`,`title`,`genre`,`des`,`author`,`publisher`,`availability`,`copies`)  
VALUES (10003,'Harry Potter and the prisoner of Azkaban','fantasy','Harry Potter, a  
young wizard, in his third year at Hogwarts School of Witchcraft and Wizardry.','J K  
Rowling',' Bloomsbury (UK)','Yes',14);
```

```
INSERT INTO `` (`num`,`title`,`genre`,`des`,`author`,`publisher`,`availability`,`copies`)  
VALUES (10004,'Harry Potter and the goblet of fire','fantasy','When Harry gets chosen  
as the fourth participant in the inter-school Triwizard Tournament, he is unwittingly  
pulled into a dark conspiracy that slowly unveils its dangerous agenda.','J K Rowling','  
Bloomsbury (UK)','Yes',10);
```

```
INSERT INTO `` (`num`,`title`,`genre`,`des`,`author`,`publisher`,`availability`,`copies`)  
VALUES (10005,'Harry Potter and the order of phoenix','fantasy','Harry Potter and  
Dumbledore\'s warning about the return of Lord Voldemort is not heeded by the wizard  
authorities who, in turn, look to undermine Dumbledore\'s authority at Hogwarts and  
discredit Harry.','J K Rowling',' Bloomsbury (UK)','Yes',12);
```

```
INSERT INTO `` (`num`,`title`,`genre`,`des`,`author`,`publisher`,`availability`,`copies`)  
VALUES (10006,'Harry Potter and the half blood prince','fantasy','Dumbledore and  
Harry Potter learn more about Voldemort\'s past and his rise to power.','J K Rowling','  
Bloomsbury (UK)','Yes',10);
```

```
INSERT INTO `` (`num`,`title`,`genre`,`des`,`author`,`publisher`,`availability`,`copies`)  
VALUES (10007,'Harry Potter and the deathly hallows','fantasy',' seventh and final  
novel of the main Harry Potter series.','J K Rowling',' Bloomsbury (UK)','Yes',11);
```

```
INSERT INTO `` (`num`,`title`,`genre`,`des`,`author`,`publisher`,`availability`,`copies`) `books`  
VALUES (10008,'Divergent','Science fiction','In a futuristic world, people are divided into  
factions. When Beatrice Prior realises that she must hide to escape the wrath of  
powerful forces.','Veronica Roth',' Katherine Tegen Books','Yes',7);
```

```
INSERT INTO `` (`num`,`title`,`genre`,`des`,`author`,`publisher`,`availability`,`copies`) `books`  
VALUES (10009,'Insurgent','Science fiction','Insurgent is a 2012 science fiction young adult  
novel by American novelist Veronica Roth and the second book in the Divergent  
trilogy. ','Veronica Roth','Katherine Tegen Books','Yes',6);
```



```
INSERT INTO `books`
(`num`,`title`,`genre`,`des`,`author`,`publisher`,`availability`,`copies`)
VALUES
(10010,'Alligiant','Science fiction','The faction-based society that Tris Prior once
believed in is shattered—fractured by violence and power struggles and scarred by loss
and betrayal.','Veronica Roth','Katherine Tegen Books','Yes',8);
```

```
INSERT INTO `books`
(`num`,`title`,`genre`,`des`,`author`,`publisher`,`availability`,`copies`)
VALUES
(10011,'Hunger games','fiction','The Hunger Games is an annual event in which one boy
and one girl aged 12–18 from each of the twelve districts fight to death.','Suzzane
Collins','Scholastic','Yes',6);
```

```
INSERT INTO `books`
(`num`,`title`,`genre`,`des`,`author`,`publisher`,`availability`,`copies`)
VALUES
(10012,'Catching fire','fiction','Science fiction young adult novel by the American
novelist Suzanne Collins, the second book in The Hunger Games series','Suzzane
Collins','Scholastic','Yes',4);
```

```
INSERT INTO `books`
(`num`,`title`,`genre`,`des`,`author`,`publisher`,`availability`,`copies`)
VALUES
(10013,'Mocking Jay','fiction','The book continues the story of Katniss Everdeen, who
agrees to unify the districts of Panem in a rebellion against the tyrannical
Capitol.','Suzzane Collins','Scholastic','Yes',7);
```

- Table – Students

```
INSERT INTO `studs` (`sid`,`name`,`address`,`phone`,`expiry`,`mem`) VALUES
(401,'Rory gilmore','stars hollow',785412369,'2022-11-30','Yes');
```

```
INSERT INTO `studs` (`sid`,`name`,`address`,`phone`,`expiry`,`mem`) VALUES
(402,'Jess Meriano','new york',852147896,'2022-11-30','Yes');
```

```
INSERT INTO `studs` (`sid`,`sname`,`address`,`phone`,`expiry`,`mem`) VALUES
(403,'Paris','hardford',995412369,'2022-11-30','Yes');
```

```
INSERT INTO `studs` (`sid`,`sname`,`address`,`phone`,`expiry`,`mem`) VALUES
(404,'Dean','stars hollow',455412369,'2022-11-30','Yes');
```

```
INSERT INTO `studs` (`sid`,`sname`,`address`,`phone`,`expiry`,`mem`) VALUES
(405,'Logan','new york',930147896,'2022-11-30','Yes');
```

```
INSERT INTO `studs` (`sid`,`sname`,`address`,`phone`,`expiry`,`mem`) VALUES
(406,'Mardy','yale',702147896,'2022-11-30','Yes');
```

- Table – Reports

```
INSERT INTO `reports` (`repnum`,`sname`,`bnum`,`sid`,`issued`,`returnd`) VALUES
(5,'Paris',10010,403,'2022-10-13','2022-10-27');
```

```
INSERT INTO `reports` (`repnum`,`sname`,`bnum`,`sid`,`issued`,`returnd`) VALUES
(6,'Dean',10004,404,'2022-11-08','2022-11-14');
```

```
INSERT INTO `reports` (`repnum`,`sname`,`bnum`,`sid`,`issued`,`returnd`) VALUES
(7,'Mardy',10004,406,'2022-11-20','2022-11-30');
```

```

INSERT INTO `reports` (`repnum`,`sname`,`bnum`,`sid`,`issued`,`returnd`) VALUES
(8,'Jess Meriano',10012,402,'2022-10-15','2022-10-27');
INSERT INTO `reports` (`repnum`,`sname`,`bnum`,`sid`,`issued`,`returnd`) VALUES
(9,'Jess Meriano',10013,402,'2022-11-15','2022-11-27');
INSERT INTO `reports` (`repnum`,`sname`,`bnum`,`sid`,`issued`,`returnd`) VALUES
(10,'JRory gilmore',10013,401,'2022-10-15','2022-10-27');

```

- Table - Publisher

```

INSERT INTO `publisher` (`pub_name`,`pub_id`,`pub_address`) VALUES (' Katherine
Tegen Books',29324,'alley 12, manhattan');
INSERT INTO `publisher` (`pub_name`,`pub_id`,`pub_address`) VALUES
('Bloomsbury (UK)',69324,'main street 2 london');
INSERT INTO `publisher` (`pub_name`,`pub_id`,`pub_address`) VALUES
('Scholastic',89324,'street 5 new york');

```

6. Join Queries

Showcase at least 4 join queries

Write the query in English Language, Show the equivalent SQL statement and also a screenshot of the query and the results

1. Inner Join of books table with publisher info table with common attribute as publisher name

```
SELECT publisher  
FROM books  
INNER JOIN publisher  
ON books.publisher=publisher.pub_name;
```

2. To check which book was issued on what date to which student, combining studs and reports table

```
SELECT studs.sid,bnum,reports.issued  
FROM studs  
INNER JOIN reports  
ON studs.sid=reports.sid;
```

3. To make sure that the student will be returning a book before their membership expires

```
SELECT studs.sid,expiry,reports.returned  
FROM studs  
LEFT JOIN reports  
ON studs.sid=reports.sid;
```

4. There are multiple copies of each book, cross join of books and reports table helps keep tabs on each of those books getting issued and returned

```
use lib;  
SELECT num,title,issued,returned  
FROM books  
CROSS JOIN reports;
```

```

1 • use lib;
2 • SELECT publisher,publisher.pub_id
3 FROM books
4 INNER JOIN publisher
5 ON books.publisher=publisher.pub_name;
6

```

result Grid	Filter Rows:	Export:	result Grid	Filter Rows:	Export:
publisher	pub_id		sid	bnum	issued
Bloomsbury (UK)	69324		401	10003	2022-11-13
Bloomsbury (UK)	69324		401	10005	2022-11-13
Bloomsbury (UK)	69324		401	10012	2022-11-20
Bloomsbury (UK)	69324		402	10004	2022-11-14
Bloomsbury (UK)	69324		402	10007	2022-11-15
Bloomsbury (UK)	69324		402	10012	2022-10-15
Bloomsbury (UK)	69324		402	10013	2022-11-15
Bloomsbury (UK)	69324		403	10010	2022-10-13
Katherine Tegen Books	29324		404	10004	2022-11-08
Scholastic	89324		404	10012	2022-11-20
Scholastic	89324		406	10004	2022-11-20
Scholastic	89324				

```

1 • use lib;
2 • SELECT studs.sid,expiry,reports.returned
3 FROM studs
4 LEFT JOIN reports
5 ON studs.sid=reports.sid;
6

```

result Grid	Filter Rows:	Export:
sid	expiry	returned
401	2022-11-30	2022-11-27
401	2022-11-30	2022-11-28
401	2022-11-30	2022-11-29
402	2022-11-30	2022-11-26
402	2022-11-30	2022-11-27
402	2022-11-30	2022-10-27
402	2022-11-30	2022-11-27
403	2022-11-30	2022-10-27
404	2022-11-30	2022-11-14
404	2022-11-30	2022-11-20
405	2022-11-30	HULL
406	2022-11-30	2022-11-30

```

1 • use lib;
2 • SELECT studs.sid,bnum,reports.issued
3 FROM studs
4 INNER JOIN reports
5 ON studs.sid=reports.sid;
6

```

result Grid	Filter Rows:	Export:	result Grid	Filter Rows:	Export:	Wrap Cell Con
num	title	issued	returned			
10002	Harry Potter and the chamber of secrets	2022-11-15	2022-11-27			
10002	Harry Potter and the chamber of secrets	2022-11-13	2022-11-28			
10002	Harry Potter and the chamber of secrets	2022-11-14	2022-11-26			
10002	Harry Potter and the chamber of secrets	2022-11-13	2022-11-27			
10003	Harry Potter and the prisoner of Azkaban	2022-11-20	2022-11-20			
10003	Harry Potter and the prisoner of Azkaban	2022-11-20	2022-11-29			
10003	Harry Potter and the prisoner of Azkaban	2022-11-15	2022-11-27			
10003	Harry Potter and the prisoner of Azkaban	2022-10-15	2022-10-27			
10003	Harry Potter and the prisoner of Azkaban	2022-11-20	2022-11-30			
10003	Harry Potter and the prisoner of Azkaban	2022-11-08	2022-11-14			
10003	Harry Potter and the prisoner of Azkaban	2022-10-13	2022-10-27			
10003	Harry Potter and the prisoner of Azkaban	2022-11-15	2022-11-27			
10003	Harry Potter and the prisoner of Azkaban	2022-11-13	2022-11-28			

7. Aggregate Functions

Showcase at least 4 Aggregate function queries

Write the query in English Language, Show the equivalent SQL statement and also a screenshot of the query and the results.

1. Average number of copies of each book available in the library

```
SELECT title, AVG(copies)
FROM books
GROUP BY title;
```

2. How many books are published by one particular author

```
SELECT books.publisher,COUNT(*)
FROM books,publisher
WHERE books.publisher=publisher.pub_name
GROUP BY publisher;
```

3. Which was the most popularly borrowed book by count() on books table and reports table

```
SELECT books.num,books.title,COUNT(*)
FROM books,reports
WHERE books.num=reports.bnum
GROUP BY title;
```

4. Which student is the most frequent borrower

```
SELECT studs.sid,reports.bnum,COUNT(*)
FROM reports,studs
WHERE studs.sid=reports.sid
GROUP BY sid;
```

5. Total number of copies of all books available at the library

```
SELECT SUM(copies) total
FROM books;
```

```

1 • use lib;
2 • SELECT title, AVG(copies)
3     FROM books
4     GROUP BY title;

```

title	AVG(copies)
Harry Potter and the philosopher's stone	13.0000
Harry Potter and the chamber of secrets	12.0000
Harry Potter and the prisoner of Azkaban	14.0000
Harry Potter and the goblet of fire	10.0000
Harry Potter and the order of phoenix	12.0000
Harry Potter and the half blood prince	10.0000
Harry Potter and the deathly hallows	11.0000
Divergent	7.0000
Insurgent	6.0000
Alligiant	8.0000
Hunger games	6.0000
Catching fire	4.0000
Mocking Jay	7.0000
aaas	0.0000

```

1 • use lib;
2 • SELECT books.publisher,COUNT(*)
3     FROM books,publisher
4     WHERE books.publisher=publisher.pub_name
5     GROUP BY publisher;

```

publisher	COUNT(*)
Bloomsbury (UK)	7
Katherine Tegen Books	1
Scholastic	3

```

1 • use lib;
2 • SELECT books.num,books.title,COUNT(*)
3     FROM books,reports
4     WHERE books.num=reports.bnum
5     GROUP BY title;

```

```

1 • use lib;
2 • SELECT studs.sid,reports.bnum,COUNT(*)
3     FROM reports,studs
4     WHERE studs.sid=reports.sid
5     GROUP BY sid;

```

num	title	COUNT(*)
10003	Harry Potter and the prisoner of Azkaban	1
10004	Harry Potter and the goblet of fire	3
10005	Harry Potter and the order of phoenix	1
10007	Harry Potter and the deathly hallows	1
10010	Alligiant	1
10012	Catching fire	3
10013	Mocking Jay	1

sid	bnum	COUNT(*)
401	10003	3
402	10004	4
403	10010	1
404	10004	2
406	10004	1

total
120

Set Operations

Showcase at least 4 Set Operations queries

Write the query in English Language, Show the equivalent SQL statement and also a screenshot of the query and the results

1. UNION ALL

```
SELECT * FROM reports
```

```
UNION ALL
```

```
SELECT * FROM studs;
```

2. UNION of specific genres of books displayed along with titles, so all books of each genre are grouped together

```
SELECT copies,title,genre
```

```
FROM books
```

```
WHERE genre = "fantasy"
```

```
UNION
```

```
SELECT copies,title,genre
```

```
FROM books
```

```
WHERE genre = "fiction"
```

3. Availability of books from a specific publisher

use lib;

```
SELECT copies,title,publisher,availability
```

```
FROM books
```

```
WHERE publisher = " Bloomsbury (UK)"
```

```
UNION
```

```
SELECT copies,title,publisher,availability
```



```
FROM books
```

```
WHERE publisher = "Katherine Tegen Books"
```


Result Grid |   Filter Rows: | Export:  | Wrap Cells

repnum	sname	brum	sid	issued	returnd
3	Rory gilmore	10005	401	2022-11-13	2022-11-28
4	Jess Meriano	10007	402	2022-11-15	2022-11-27
5	Paris	10010	403	2022-10-13	2022-10-27
6	Dean	10004	404	2022-11-08	2022-11-14
7	Mardy	10004	406	2022-11-20	2022-11-30
8	Jess Meriano	10012	402	2022-10-15	2022-10-27
9	Jess Meriano	10013	402	2022-11-15	2022-11-27
10	Rory gilmore	10012	401	2022-11-20	2022-11-29
11	Dean	10012	404	2022-11-20	2022-11-20
401	Rory gilmore	stars ...	785...	2022-11-30	Yes
402	Jess Meriano	new ...	852...	2022-11-30	Yes
403	Paris	hardf...	995...	2022-11-30	Yes
404	Dean	stars ...	455...	2022-11-30	Yes
405	Logan	new ...	930...	2022-11-30	Yes
406	Mardy	yale	702...	2022-11-30	Yes

Result 30 x

Result 30 x |   Filter Rows: | Export: 

copies	title	genre
13	Harry Potter and the philosopher's stone	fantasy
12	Harry Potter and the chamber of secrets	fantasy
14	Harry Potter and the prisoner of Azkaban	fantasy
10	Harry Potter and the goblet of fire	fantasy
12	Harry Potter and the order of phoenix	fantasy
10	Harry Potter and the half blood prince	fantasy
11	Harry Potter and the deathly hallows	fantasy
6	Hunger games	fiction
4	Catching fire	fiction
7	Mocking Jay	fiction

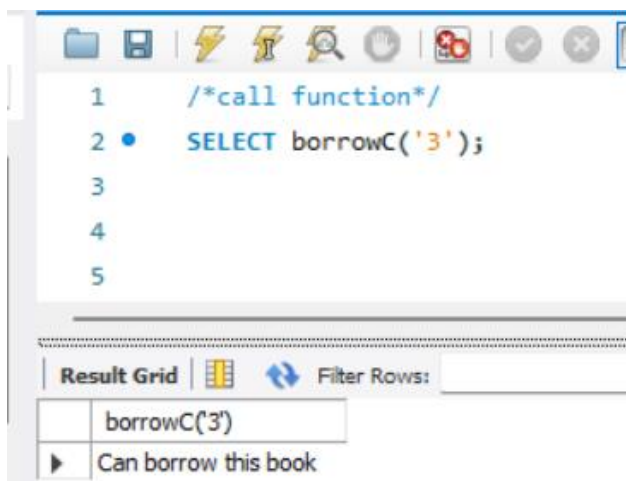
copies	title	publisher	availability
13	Harry Potter and the philosopher's stone	Bloomsbury (UK)	Yes
12	Harry Potter and the chamber of secrets	Bloomsbury (UK)	Yes
14	Harry Potter and the prisoner of Azkaban	Bloomsbury (UK)	Yes
10	Harry Potter and the goblet of fire	Bloomsbury (UK)	Yes
12	Harry Potter and the order of phoenix	Bloomsbury (UK)	Yes
10	Harry Potter and the half blood prince	Bloomsbury (UK)	Yes
11	Harry Potter and the deathly hallows	Bloomsbury (UK)	Yes
6	Insurgent	Katherine Tegen Books	Yes
8	Alligiant	Katherine Tegen Books	Yes

Functions and Procedures

Create a Function and Procedure. State the objective of the function / Procedure. Run and display the results.

Function - If all copies of a book are borrowed then copy count will be zero and no borrow request for those books can go through.

```
DELIMITER $$
CREATE FUNCTION borrowC(copies INT)
RETURNS varchar(255)
DETERMINISTIC
BEGIN
DECLARE num INT;
DECLARE answer VARCHAR(255);
SET num = (SELECT COUNT(books.copies)
FROM books
WHERE copies = books.copies);
IF num < 0 THEN
SET answer = "cannot borrow this book as its copies count is over as its borrowed
completely";
ELSE
SET answer = "Can borrow this book";
END IF;
RETURN answer;
END $$
```



8. Triggers and Cursors

Create a Trigger and a Cursor. State the objective. Run and display the results.

Trigger – A student can not borrow more than 3 books at any given instance of time

```
DELIMITER $$
```

```
CREATE TRIGGER limited_borrows
```

```
BEFORE INSERT ON reports
```

```
FOR EACH ROW BEGIN
```

```
DECLARE error_msg VARCHAR(255) ;
```

```
DECLARE countstud int;
```

```
SET countstud= (SELECT count(sid) FROM reports WHERE sid=NEW.sid GROUP BY sid);
```

```
SET error_msg =(
```

```
'The new report for this student cannot be generated as its number exceeds 3 in the record'
```

```
) ; IF countstud >=3 THEN SIGNAL SQLSTATE '45000'
```

```
SET MESSAGE_TEXT = error_msg ;
```

```
END IF;
```

```
END $$ DELIMITER ;
```

```
INSERT INTO `reports` (`repnum`,`sname`,`bnum`,`sid`,`issued`,`returnd`) VALUES  
(16,'Rory gilmore',10012,401,'2022-10-15','2022-10-27');
```

Action Output			
#	Time	Action	Message
✓ 189	01:09:20	Apply changes to reports	Changes applied
✗ 190	01:09:33	INSERT INTO `reports` (`repnum`,`sname`,`bnum`,`si...	Error Code: 1644. The new report for this student cannot be generated as its number exceeds 3 in the record

Cursors – Creates a backup table for table reports, when a record/tuple is deleted.

```
CREATE TABLE backuprep LIKE reports;
```

```
DELIMITER $$
```

```
CREATE TRIGGER backupUpdate
```

```
BEFORE DELETE ON reports
```

```
FOR EACH ROW
```

```
BEGIN
```

```
INSERT INTO backuprep
```

```
SELECT * FROM reports
```

```
WHERE reports.repnum=OLD.repnum;
```

```
END $$
```

```
DELIMITER ;
```

```
3 • DELETE FROM reports WHERE repnum='8';  
4 /*check backup table*/  
5 • SELECT * FROM backuprep;
```

Result Grid						
Filter Rows: <input type="text"/>						
Edit: Export/Import:						
	repnum	sname	bnum	sid	issued	returnd
▶	8	Jess Meriano	10012	402	2022-10-15	2022-10-27
*	NULL	NULL	NULL	NULL	NULL	NULL

backuprep 5 x				
Output				
Action Output				
#	Time	Action	Message	
✓ 194	01:13:30	DELETE FROM reports WHERE repnum='8'	1 row(s) affected	
✓ 195	01:13:30	SELECT * FROM backuprep LIMIT 0, 1000	1 row(s) returned	

9. Developing the Frontend

The frontend should support

1. Addition, Modification and Deletion of records from any chosen table
2. There should be an window to accept and run any SQL statement and display the result

Menu

Add Books

View Books

Edit Books

Remove Books

Menu

Add Books

View Books

Edit Books

Remove Books

Menu

Add Books

View Books

Edit Books

Remove Books

Library Management System

Enter Book Details:

Book No	Book Title	Genre	mini description
10014	Five feet apart	young adult	Seventeen-year-old St
Author	Publisher	Availability	Number of copies
Mikki	simon	Yes	3 Press Enter to apply - +
Add this book to the library			

Library Management System

Enter Book Details:

Book No	Book Title	Genre	mini description
10014	Five feet apart	young adult	Seventeen-year-old St
Author	Publisher	Availability	Number of copies
Mikki	Simon	Yes	3.00 - +
Add this book to the library			

Successfully added the book: Five feet apart

View created records

	Book no	Book Title	Genre	Description
4	10005	Harry Potter and the order of phoenix	fantasy	Harry Potter and Dumbledore's warning
5	10006	Harry Potter and the half blood prince	fantasy	Dumbledore and Harry Potter learn more
6	10007	Harry Potter and the deathly hallows	fantasy	seventh and final novel of the main Harry
7	10008	Divergent	Science fiction	In a futuristic world, people are divided in
8	10009	Insurgent	Science fiction	Insurgent is a 2012 science fiction young
9	10010	Alligiant	Science fiction	The faction-based society that Tris Prior
10	10011	Hunger games	fiction	The Hunger Games is an annual event in
11	10012	Catching fire	fiction	Science fiction young adult novel by the
12	10013	Mocking Jay	fiction	The book continues the story of Katniss E
13	10014	Five feet apart	young adult	Seventeen-year-old Stella spends most o

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10	10011	Hunger games	fiction	The Hunger Games is an annual event in
11	10012	Catching fire	fiction	Science fiction young adult novel by the
12	10013	Mocking Jay	fiction	The book continues the story of Katniss E

Book details to Edit

Alligiant

Books No	Book Title	Genre	mini description
10010	Allegiant (book 3)	Science fiction	The faction-based soc
Author	Publisher	Availability	Number of copies
Veronica Roth	Katherine Tegen Book	Yes	11 <small>Press Enter to apply</small>

Update Book Details

12	10013	Mocking Jay	fiction	The book continues the story of Katniss E
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Book details to Edit

Alligiant

Books No	Book Title	Genre	mini description
10010	Allegiant sequel 3	Science fiction	The faction-based soc
Author	Publisher	Availability	Number of copies
Veronica Roth	Katherine Tegen Book	Yes	11 - +

Update Book Details

Successfully
updated values for
book:: Alligiant to
::Allegiant sequel 3

Delete any book that you are taking off the library

Current books

Book to Delete

Five feet apart

Do you want to delete book::Five feet apart

Delete Book

Delete any book that you are taking off the library

Current books

Book to Delete

Five feet apart

Do you want to delete book::Five feet apart

Delete Book

Book has been deleted successfully

12. Conclusion

This Library management system provides all the necessary operations like adding, modifying and deleting books to the library database. A books detail record is maintained that contains all the important information like title, author, genre, publisher, availability and copies in library required. A report of borrowing books is generated and maintained, with return date extension option and no student can borrow over 3 books at any instance of time, if book copy number becomes 0 as all copies are borrowed further borrow requests are declined for that book. A student membership table is also maintained in this database, when a student membership expires it asks to renew. Its a very easy to use interface to handle and maintain the database, saving the manual labor.

References (If any)