PART B

Micro-project proposal

Title :- Library Management System Using SQL

Rationale : -

A library is a collection of organized information and resources which is made accessible to a well-defined community for borrowing or reference sake. The collection of the resources and information are provided in digital or physical format in either a building/room or in a virtual space or even both. Library's resources and collections may include newspapers, books, films, prints, maps, CDs, tapes, videotapes, microform, database etc. The main aim of this system is to develop a new programmed system that will conveying ever lasting solution to the manual base operations and to make available a channel through which staff can maintain the record easily and customers can access the information about the library at whatever place they might find themselves. Library Management System allows the user to store the book details and the customer details. The system is strong enough to withstand regressive yearly operations under conditions where the database is maintained and cleared over a certain time of span. The implementation of the system in the organization will considerably reduce data entry, time and also provide readily calculated reports.

OBJECTIVE: - It keeps track of all the information about the books in the library, their cost, status and total number of books available in the Library. The user will find it easy in this automated system rather than using the manual writing system. The system contains a database where all the information will be stored safely.

2.0 Aim/Benefits of the Micro-Project : -

This Micro-Project aims at -

- To understand the concept of Database Management System .
- To know the actual use of views and sequences and to design application.
- To make the existing system more efficient.
- To provide Security and Transaction processing query.
- To provide a user friendly environment where user can be serviced better.

3.0 Course Outcomes Achieved : -

- Create database using SQL command.
- Manage database using SQL commands.
- Implement Advanced SQL concepts on database.
- Write PL/ SQL code for database.
- Apply security and Safety on database.

4.0 Literature review : -

Library Management system helps in maintaining data of books issued to learners and books available in the library. This helps librarians to spot any particular book at any given time in the library. This kind of Library management system can be easily customized as per individuals requirements. It's easy to use interface and immediate reporting makes things easier for the school library staff. For easy arrangement, such type of system divides the books on Biographer name, Manuscript group, Publisher and more. With the help of barcode, the Librarian can keep track of different records such as:

- Issue Date
- Return Date
- Book catalogs with different genres
- Number of books issued
- Number of books available
- Collection & Calculation of Fine on the individual book

With the development of digital content, it becomes more important to manage the catalog of educational information with a scalable and reliable Library Management System that will support the general requirement of the library. It enables system administrators to keep an eye on the library department's functioning and also enables librarians and users to maximize time and efficiency. By using this kind of system, the management would be able to understand the work outline and fineness of different librarians as well. They also get to know how well-maintained the record of issued books and fine collection is, apart from this management is also being able to track the income from fines due to late submissions of books.

5.0 Actual Methodology Followed : -

We have planned the micro-project on 'Library Management System' under the guidance of Mrs. Sneha Raut mam. Then our team researched on needs of program and collected information related to our micro-project by using internet and books. We took the reference from other sites used in different programming which are available on internet. We studied their working, structure and user friendly interface.

After the research of one week, we have started implementing the collected information in program. We have created Queries for Library Management System. Then we have tested this Queries of Library Management system to find out incorrect queries and troubleshoot them under our guidance teacher. After Testing, we have finalized the project and prepared report on

Library Management System.

6.0 Actual Resource Used : -

Sr.No	Instruments	Specifications	Quantity
1	Desktop PC	i3 processor, 8GB Ram	1
2	Operating System	Windows 11	1
3	Software	Mysql	1
4	Other	Internet, Reference Book	1

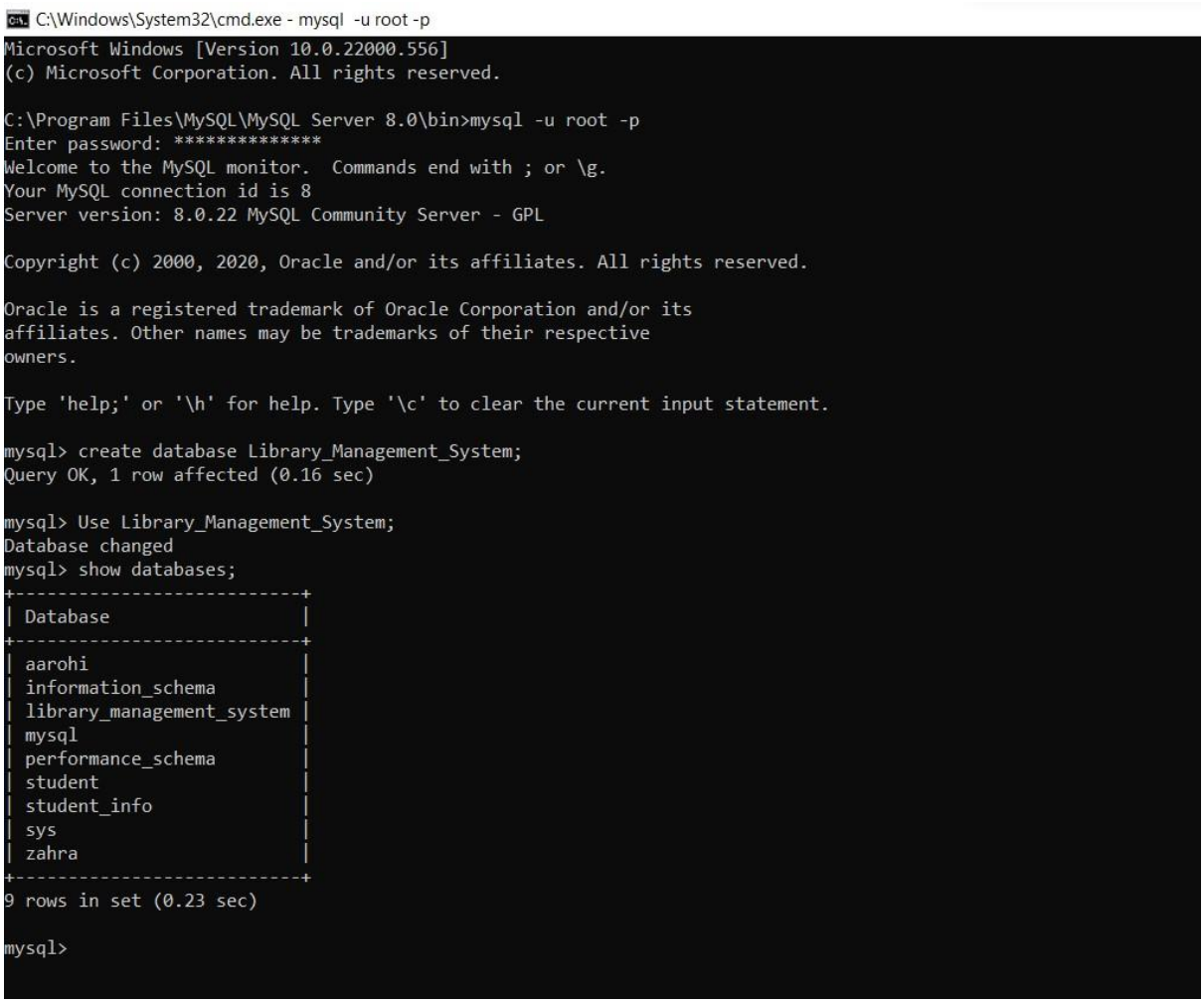
7.0 Creating database on MYSQL :-

mysql> create database Library_Management_System;

Query OK, 1 row affected (0.16 sec)

mysql> Use Library_Management_System;

Database changed



mysql> Create table Books(ISBN int(100) not null, book_title varchar(50) not null, category varchar(50) not null, rental_price int(10) not null, status varchar(50), author varchar(50) not null, publisher varchar(50) not null, primary key(ISBN)) ;

Query OK, 0 rows affected, 2 warnings (0.88 sec)

mysql> Create table Employees (employ_id int(10) not null, employ_name varchar(50) not null, position varchar(30) not null, salary int(10) not null, primary key(employ_id));

Query OK, 0 rows affected, 2 warnings (0.23 sec)

mysql> Create table customer (customer_id int(10) not null, customer_name varchar(50), customer_address varchar(100) not null, registration_date date not null, primary key(customer_id));

Query OK, 0 rows affected, 1 warning (0.40 sec)

mysql> Create table branch (branch_no int(10) not null, manager_id int(10) not null ,branch_address varchar(100) not null, contact_no int(10) not null, primary key(branch_no));

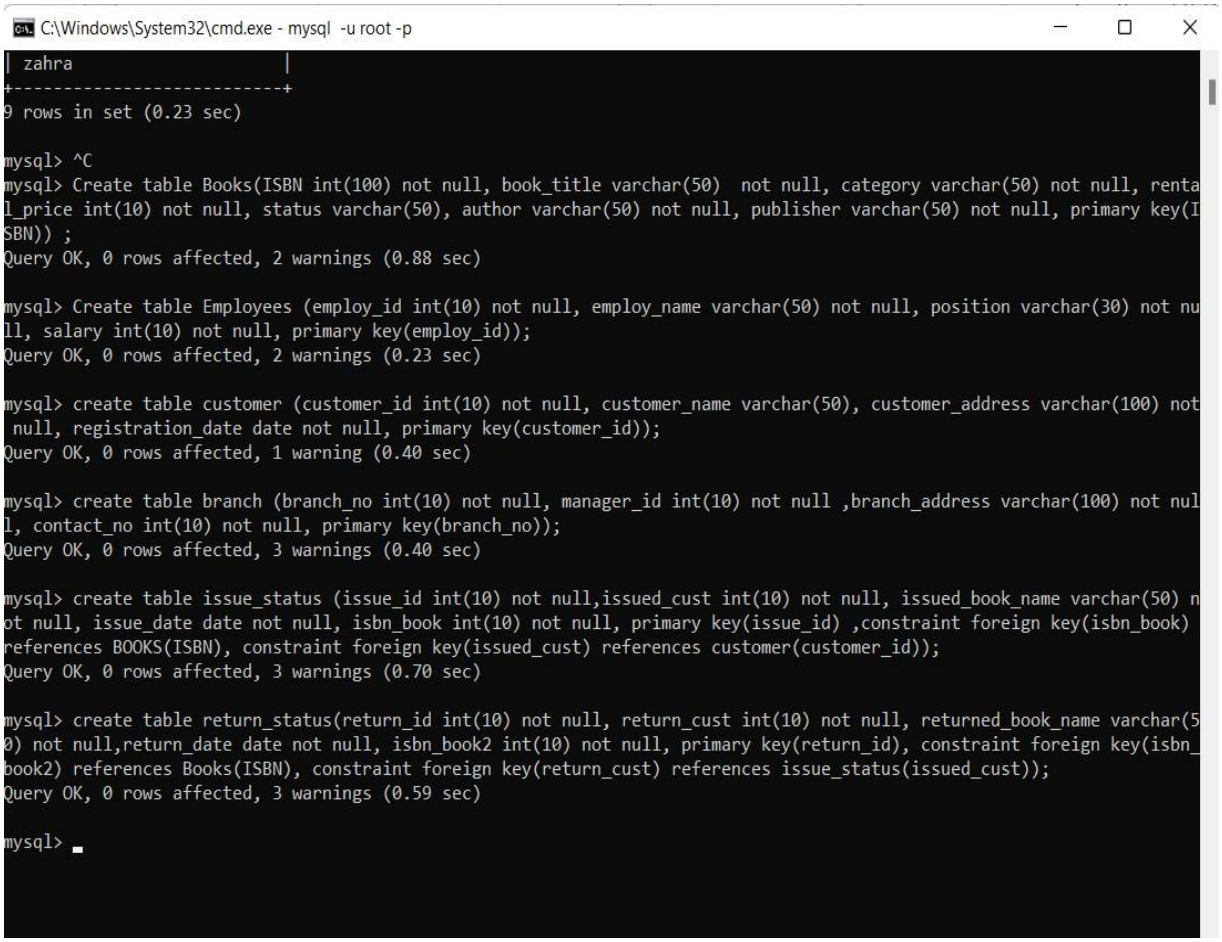
Query OK, 0 rows affected, 3 warnings (0.40 sec)

mysql> Create table issue_status (issue_id int(10) not null,issued_cust int(10) not null, issued_book_name varchar(50) not null, issue_date date not null, isbn_book int(10) not null, primary key(issue_id) ,constraint foreign key(isbn_book) references BOOKS(ISBN), constraint foreign key(issued_cust) references customer(customer_id));

Query OK, 0 rows affected, 3 warnings (0.70 sec)

mysql> Create table return_status(return_id int(10) not null, return_cust int(10) not null, returned_book_name varchar(50) not null,return_date date not null, isbn_book2 int(10) not null, primary key(return_id), constraint foreign key(isbn_book2) references Books(ISBN), constraint foreign key(return_cust) references issue_status(issued_cust));

Query OK, 0 rows affected, 3 warnings (0.59 sec)




```
mysql> desc books;
+--------------+-------------+------+-----+---------+-------+
| Field        | Type        | Null | Key | Default | Extra |
+--------------+-------------+------+-----+---------+-------+
| ISBN         | int         | NO   | PRI | NULL    |       |
| book_title   | varchar(50) | NO   |     | NULL    |       |
| category     | varchar(50) | NO   |     | NULL    |       |
| rental_price | int         | NO   |     | NULL    |       |
| status       | varchar(50) | YES  |     | NULL    |       |
| author       | varchar(50) | NO   |     | NULL    |       |
| publisher    | varchar(50) | NO   |     | NULL    |       |
+--------------+-------------+------+-----+---------+-------+
7 rows in set (0.32 sec)

mysql> desc employees;
+-------------+-------------+------+-----+---------+-------+
| Field       | Type        | Null | Key | Default | Extra |
+-------------+-------------+------+-----+---------+-------+
| employ_id   | int         | NO   | PRI | NULL    |       |
| employ_name | varchar(50) | NO   |     | NULL    |       |
| position    | varchar(30) | NO   |     | NULL    |       |
| salary      | int         | NO   |     | NULL    |       |
+-------------+-------------+------+-----+---------+-------+
4 rows in set (0.00 sec)

mysql> desc customer;
+------------------+--------------+------+-----+---------+-------+
| Field            | Type         | Null | Key | Default | Extra |
+------------------+--------------+------+-----+---------+-------+
| customer_id      | int          | NO   | PRI | NULL    |       |
| customer_name    | varchar(50)  | YES  |     | NULL    |       |
| customer_address | varchar(100) | NO   |     | NULL    |       |
| registration_date | date        | NO   |     | NULL    |       |
+------------------+--------------+------+-----+---------+-------+
4 rows in set (0.07 sec)
```

```
mysql> desc branch;
+----------------+--------------+------+-----+---------+-------+
| Field          | Type         | Null | Key | Default | Extra |
+----------------+--------------+------+-----+---------+-------+
| branch_no      | int          | NO   | PRI | NULL    |       |
| manager_id     | int          | NO   |     | NULL    |       |
| branch_address | varchar(100) | NO   |     | NULL    |       |
| contact_no     | int          | NO   |     | NULL    |       |
+----------------+--------------+------+-----+---------+-------+
4 rows in set (0.00 sec)

mysql> desc issue_status;
+------------------+-------------+------+-----+---------+-------+
| Field            | Type        | Null | Key | Default | Extra |
+------------------+-------------+------+-----+---------+-------+
| issue_id         | int         | NO   | PRI | NULL    |       |
| issued_cust      | int         | NO   | MUL | NULL    |       |
| issued_book_name | varchar(50) | NO   |     | NULL    |       |
| issue_date       | date        | NO   |     | NULL    |       |
| isbn_book        | int         | NO   | MUL | NULL    |       |
+------------------+-------------+------+-----+---------+-------+
5 rows in set (0.08 sec)

mysql> desc return_status;
+--------------------+-------------+------+-----+---------+-------+
| Field              | Type        | Null | Key | Default | Extra |
+--------------------+-------------+------+-----+---------+-------+
| return_id          | int         | NO   | PRI | NULL    |       |
| return_cust        | int         | NO   | MUL | NULL    |       |
| returned_book_name | varchar(50) | NO   |     | NULL    |       |
| return_date        | date        | NO   |     | NULL    |       |
| isbn_book2         | int         | NO   | MUL | NULL    |       |
+--------------------+-------------+------+-----+---------+-------+
5 rows in set (0.06 sec)
```

mysql> insert into Books values(1000,'book1','comedy',5,'available','author1','pub1');

Query OK, 1 row affected (0.18 sec)

mysql> insert into Books values (0-111-222-333,'Vb.Net','Technical',345, 'available','Balgurswamy','Navneet');

Query OK, 1 row affected (0.11 sec)

mysql> insert into Books values(0-111-222-444,'Dbms','technical',55,'available','sumit katkar','vikas');

Query OK, 1 row affected (0.06 sec)

mysql> insert into Books values(0-111-222-555,'Java','technical',34,'available','Nikita','black book');

Query OK, 1 row affected (0.12 sec)

mysql> insert into Books values(0-111-222-666,'A.p.j. Abdul kalam','novel',55,'available','A.p.J',’K.K.R’);

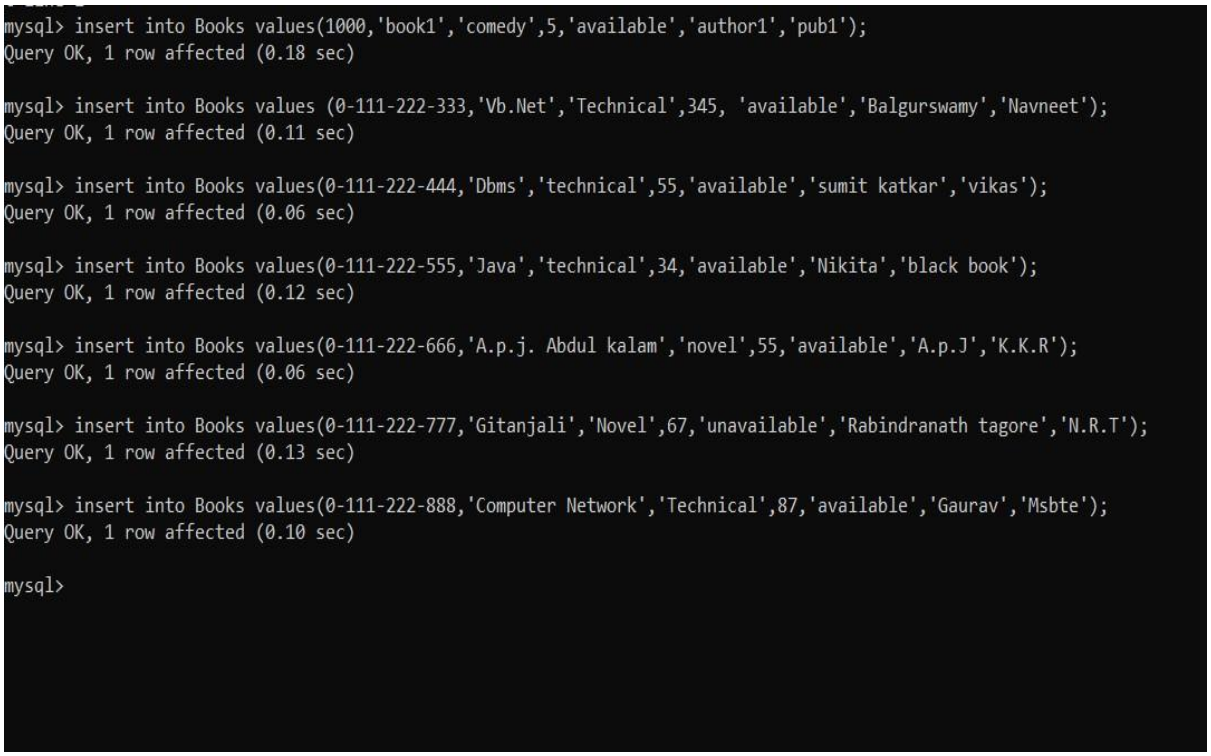
Query OK, 1 row affected (0.06 sec)

mysql> insert into Books values(0-111-222-777,'Gitanjali','Novel',67,'unavailable','Rabindranath tagore','N.R.T');

Query OK, 1 row affected (0.13 sec)

mysql> insert into Books values(0-111-222-888,'Computer Network','Technical',87,'available','Gaurav','Msbte');

Query OK, 1 row affected (0.10 sec)



```
mysql> select * from Books;
+-------+--------------------+-----------+--------------+-------------+---------------------+------------+
| ISBN  | book_title         | category  | rental_price | status      | author              | publisher  |
+-------+--------------------+-----------+--------------+-------------+---------------------+------------+
| -1221 | Computer Network   | Technical |           87 | available   | Gaurav              | Msbte      |
| -1110 | Gitanjali          | Novel     |           67 | unavailable | Rabindranath tagore | N.R.T      |
|  -999 | A.p.j. Abdul kalam | novel     |           55 | available   | A.p.J               | K.K.R      |
|  -888 | Java               | technical |           34 | available   | Nikita              | black book |
|  -777 | Dbms               | technical |           55 | available   | sumit katkar        | vikas      |
|  -666 | Vb.Net             | Technical |          345 | available   | Balgurswamy         | Navneet    |
|  1000 | book1              | comedy    |            5 | available   | author1             | pub1       |
+-------+--------------------+-----------+--------------+-------------+---------------------+------------+
7 rows in set (0.04 sec)

mysql>
```

mysql> alter table branch add constraint foreign key(manager_id) references employees(employ_id);

Query OK, 0 rows affected (1.57 sec)

Records: 0 Duplicates: 0 Warnings: 0

mysql> insert into employees values(18105,'rahul','manager',30000);

Query OK, 1 row affected (0.08 sec)

mysql> insert into employees values(18106,'Aarohi','worker',10000);

Query OK, 1 row affected (0.09 sec)

mysql> insert into employees values(18107,'Aarush','worker',10000);

Query OK, 1 row affected (0.06 sec)

mysql> insert into employees values(18108,'Zahra','reader',20000);

Query OK, 1 row affected (0.08 sec)

mysql> insert into employees values(18156,'Aalia','assist',20000);

Query OK, 1 row affected (0.06 sec)

```
mysql> select * from employees;
+-----------+-------------+----------+--------+
| employ_id | employ_name | position | salary |
+-----------+-------------+----------+--------+
|     18105 | rahul       | manager  |  30000 |
|     18106 | Aarohi      | worker   |  10000 |
|     18107 | Aarush      | worker   |  10000 |
|     18108 | Zahra       | reader   |  20000 |
|     18156 | Aalia       | assist   |  20000 |
+-----------+-------------+----------+--------+
5 rows in set (0.03 sec)

mysql>
```

mysql> insert into branch values(1,18105,'Pune',987654321);

Query OK, 1 row affected (0.10 sec)

mysql> insert into branch values(3,18106,'Pune',987654323);

Query OK, 1 row affected (0.09 sec)

mysql> insert into branch values(83,18108,'Mumbai',897897987);

Query OK, 1 row affected (0.06 sec)

mysql> insert into branch values(63,18156,'Mumbai',989894323);

Query OK, 1 row affected (0.20 sec)

mysql> insert into branch values(344,18107,'Thane',987689687);

Query OK, 1 row affected (0.04 sec)

```
mysql> select * from branch;
+-----------+------------+----------------+------------+
| branch_no | manager_id | branch_address | contact_no |
+-----------+------------+----------------+------------+
|         1 |      18105 | Pune           |  987654321 |
|         3 |      18106 | Pune           |  987654323 |
|        63 |      18156 | Mumbai         |  989894323 |
|        83 |      18108 | Mumbai         |  897897987 |
|       344 |      18107 | Thane          |  987689687 |
+-----------+------------+----------------+------------+
5 rows in set (0.04 sec)

mysql>
```

mysql> insert into customer values(11,'Sarthak','Manchar','2008:10:10');

Query OK, 1 row affected (0.10 sec)

mysql> insert into customer values(122332,'Vaishnavi','Jalgaon','2008:03:03');

Query OK, 1 row affected (0.09 sec)

mysql> insert into customer values(13344,'Priya','Pune','2009:03:03');

Query OK, 1 row affected (0.07 sec)

mysql> insert into customer values(143434,'Siddhi','Chakan','2009:04:04');

Query OK, 1 row affected (0.05 sec)

```
mysql> select * from customer;
+-------------+---------------+------------------+-------------------+
| customer_id | customer_name | customer_address | registration_date |
+-------------+---------------+------------------+-------------------+
|          11 | Sarthak       | Manchar          | 2008-10-10        |
|       13344 | Priya         | Pune             | 2009-03-03        |
|      122332 | Vaishnavi     | Jalgaon          | 2008-03-03        |
|      143434 | Siddhi        | Chakan           | 2009-04-04        |
+-------------+---------------+------------------+-------------------+
4 rows in set (0.00 sec)

mysql> AC
```

8.0 Advanced Features of SQL : -

mysql> Create view lb_books as select ISBN, book_title, category, status from Books;

Query OK, 0 rows affected (0.08 sec)

```
mysql> Create view lb_books as select ISBN, book_title, category, status from Books;
Query OK, 0 rows affected (0.08 sec)

mysql> select * from lb_books;
+-------+--------------------+-----------+-------------+
| ISBN  | book_title         | category  | status      |
+-------+--------------------+-----------+-------------+
| -1221 | Computer Network   | Technical | available   |
| -1110 | Gitanjali          | Novel     | unavailable |
|  -999 | A.p.j. Abdul kalam | novel     | available   |
|  -888 | Java               | technical | available   |
|  -777 | Dbms               | technical | available   |
|  -666 | Vb.Net             | Technical | available   |
|  1000 | book1              | comedy    | available   |
+-------+--------------------+-----------+-------------+
7 rows in set (0.00 sec)

mysql>
```

mysql> alter view lb_books as select ISBN, book_title, category, status from Books;

Query OK, 0 rows affected (0.15 sec)

```
mysql> alter view lb_books as select ISBN, book_title, category, status, author from Books;
Query OK, 0 rows affected (0.29 sec)

mysql> select * from lb_books;
+-------+--------------------+-----------+-------------+---------------------+
| ISBN  | book_title         | category  | status      | author              |
+-------+--------------------+-----------+-------------+---------------------+
| -1221 | Computer Network   | Technical | available   | Gaurav              |
| -1110 | Gitanjali          | Novel     | unavailable | Rabindranath tagore |
|  -999 | A.p.j. Abdul kalam | novel     | available   | A.p.J               |
|  -888 | Java               | technical | available   | Nikita              |
|  -777 | Dbms               | technical | available   | sumit katkar        |
|  -666 | Vb.Net             | Technical | available   | Balgurswamy         |
|  1000 | book1              | comedy    | available   | author1             |
+-------+--------------------+-----------+-------------+---------------------+
7 rows in set (0.10 sec)

mysql>
```

mysql> alter view lb_books as select ISBN, book_title, category, status, author from Books;

Query OK, 0 rows affected (0.29 sec)

```
mysql>
mysql> select ISBN, book_title , author  from lb_books where category ='technical';
+-------+------------------+--------------+
| ISBN  | book_title       | author       |
+-------+------------------+--------------+
| -1221 | Computer Network | Gaurav       |
|  -888 | Java             | Nikita       |
|  -777 | Dbms             | sumit katkar |
|  -666 | Vb.Net           | Balgurswamy  |
+-------+------------------+--------------+
4 rows in set (0.00 sec)

mysql>
```

mysql> Select ISBN, book_title , customer_id, customer_name from books inner join customer on books. book_title = customer.customer_id;

Query OK, 1 row affected (0.00sec)

Mysql>select host, user from mysql.user;

Mysql> create user ‘Gpa’@ ‘localhost’ identified by ‘gpa’;

Query OK, 1 row affected (0.02sec)

Mysql>select host, user from mysql.user;

Mysql> grant all on *.* to ’Gpa’@ ’localhost’ with grant option;

Query OK, 1 row affected (0.02sec)

```
mysql> select host, user from mysql.user;
+-----------+------------------+
| host      | user             |
+-----------+------------------+
| localhost | mysql.infoschema |
| localhost | mysql.session    |
| localhost | mysql.sys        |
| localhost | root             |
+-----------+------------------+
4 rows in set (0.00 sec)

mysql> create user 'Gpa'@ 'localhost' identified by 'gpa';
ERROR 1064 (42000): You have an error in your SQL syntax; check the mar
mysql> create user 'Gpa'@'localhost' identified by 'gpa';
Query OK, 0 rows affected (0.30 sec)
```

```
mysql> select host, user from mysql.user;
+-----------+------------------+
| host      | user             |
+-----------+------------------+
| localhost | Gpa              |
| localhost | mysql.infoschema |
| localhost | mysql.session    |
| localhost | mysql.sys        |
| localhost | root             |
+-----------+------------------+
5 rows in set (0.00 sec)

mysql> grant all on *.* to 'Gpa'@'localhost' with grant option;
Query OK, 0 rows affected (0.20 sec)

mysql>
```

```
mysql> show databases;
+---------------------------+
| Database                  |
+---------------------------+
| aarohi                    |
| information_schema        |
| library_management_system |
| mysql                     |
| performance_schema        |
| student                   |
| student_info              |
| sys                       |
| zahra                     |
+---------------------------+
9 rows in set (0.05 sec)

mysql> use library_management_system;
Database changed
mysql> grant select, update, drop on *.* to 'Gpa'@'localhost' with grant option;
Query OK, 0 rows affected (0.05 sec)
```

```
mysql> use library_management_system;
Database changed
mysql> select * from Books;
+-------+--------------------+-----------+--------------+-------------+--------------------+------------+
| ISBN  | book_title         | category  | rental_price | status      | author             | publisher  |
+-------+--------------------+-----------+--------------+-------------+--------------------+------------+
| -1221 | Computer Network   | Technical |           87 | available   | Gaurav             | Msbte      |
| -1110 | Gitanjali          | Novel     |           67 | unavailable | Rabindranath tagore | N.R.T      |
|  -999 | A.p.j. Abdul kalam | novel     |           55 | available   | A.p.J              | K.K.R      |
|  -888 | Java               | technical |           34 | available   | Nikita             | black book |
|  -777 | Dbms               | technical |           55 | available   | sumit katkar       | vikas      |
|  -666 | Vb.Net             | Technical |          345 | available   | Balgurswamy        | Navneet    |
|  1000 | book1              | comedy    |            5 | available   | author1            | pub1       |
+-------+--------------------+-----------+--------------+-------------+--------------------+------------+
7 rows in set (0.04 sec)

mysql>
```

9.0 Skill developed/learning outcome of this micro-project : -

This system Enhances the different concepts of Database Management System(DBMS) and Advanced Features of SQL like view, Sequences, Synonyms, Procedures, And Functions.

We learned Database security, Implicit and Explicit cursors, and database Backup, etc.

We also learnt that how to make user friendly and environment friendly programs through this system of database management system.

10.0 Applications of micro-project : -

1) Able to take Proper handling of data for customized user .

2) It's easy to use interface and immediate reporting makes things easier for user

3) To make the existing system more efficient.

4) To provide a user friendly environment where user can be serviced better.

11.0 Conclusion:

SQL database management application which is very well used in the modern world in organizing and manipulating a database. Though SQL doesn't have the GUI interface like Microsoft access is having and they all manage the database comfortable. Depending on the user or users, if an organization has multiple users then they should go for SQL server based application. This project shows how to create tables in SQL and how to create simple data manipulation language and data definition language with how to execute them.

12.0 References : -

- http://www.academia.edu
- https://lbsitbytes2010.wordpress.com
- https://www.slideshare.net
- http://www.c-sharpcorner.com
- http://stackoverflow.com

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