Consider the Book Lending system from the library- BOOKS, STUDENT, BORROWS. The students are allowed to borrow any number of books on a given date from the library. The details of the book should include ISBN, Title of the Book, author, and publisher. All students need not compulsorily borrow books.
a) Mention the constraints neatly.
b) Design the ER diagram for the problem statement
c) State the schema diagram for the ER diagram.

Create table queries:

```
mysql> create table books(
    -> bid varchar(5) primary key,
    -> title varchar(20),
    -> author varchar(20),
    -> publisher varchar(20));
Query OK, 0 rows affected (0.03 sec)

mysql> create table student(
    -> sid varchar(5) primary key,
    -> sname varchar(20),
    -> gender varchar(10));
Query OK, 0 rows affected (0.01 sec)

mysql> create table borrows(
    -> bid varchar(5),
    -> sid varchar(5),
    -> number int,
    -> primary key(bid,sid),
    -> foreign key(bid) references books(bid) on delete cascade on update cascade,
    -> foreign key(sid) references student(sid) on delete cascade on update cascade);
Query OK, 0 rows affected (0.02 sec)
```

Insert queries:

```
mysql> INSERT INTO books (bid, title, author, publisher)
    -> VALUES
    ->     ('B001', 'DB Mgmt', 'Smith', 'Tech Pub'),
    ->     ('B002', 'Web Dev', 'Brown', 'Coding Bks'),
    ->     ('B003', 'Net Basics', 'Johnson', 'Net Pub'),
    ->     ('B004', 'Python', 'Williams', 'Tech Pub'),
    ->     ('B005', 'AI', 'Johnson', 'AI Press');
Query OK, 5 rows affected (0.01 sec)
Records: 5  Duplicates: 0  Warnings: 0

mysql> INSERT INTO student (sid, sname, gender)
    -> VALUES
    ->     ('S001', 'Alice', 'Female'),
    ->     ('S002', 'Bob', 'Male'),
    ->     ('S003', 'Carol', 'Female'),
    ->     ('S004', 'David', 'Male'),
    ->     ('S005', 'Eva', 'Female');
Query OK, 5 rows affected (0.00 sec)
Records: 5  Duplicates: 0  Warnings: 0

mysql> INSERT INTO borrows (bid, sid, number)
```

```
    -> VALUES
    ->     ('B001', 'S001', 2),
    ->     ('B002', 'S002', 1),
    ->     ('B001', 'S003', 3),
    ->     ('B003', 'S004', 1),
    ->     ('B004', 'S001', 2);
Query OK, 5 rows affected (0.00 sec)
```

Select statements:

```
mysql> select * from books;
+------+------------+----------+------------+
| bid  | title      | author   | publisher  |
+------+------------+----------+------------+
| B001 | DB Mgmt    | Smith    | Tech Pub   |
| B002 | Web Dev    | Brown    | Coding Bks |
| B003 | Net Basics | Johnson  | Net Pub    |
| B004 | Python     | Williams | Tech Pub   |
| B005 | AI         | Johnson  | AI Press   |
+------+------------+----------+------------+
5 rows in set (0.00 sec)

mysql> select * from student;
+------+-------+--------+
| sid  | sname | gender |
+------+-------+--------+
| S001 | Alice | Female |
| S002 | Bob   | Male   |
| S003 | Carol | Female |
| S004 | David | Male   |
| S005 | Eva   | Female |
+------+-------+--------+
5 rows in set (0.00 sec)

mysql> select * from borrows;
+------+------+--------+
| bid  | sid  | number |
+------+------+--------+
| B001 | S001 |      2 |
| B001 | S003 |      3 |
| B002 | S002 |      1 |
| B003 | S004 |      1 |
| B004 | S001 |      2 |
+------+------+--------+
5 rows in set (0.00 sec)
```

1. Obtain the names of the student who has borrowed either book bearing ISBN ‘123’ or ISBN ‘124’.

```
mysql> select * from student where sid in (select sid from borrows where bid="B001" or
bid="B002");
+------+-------+--------+
| sid  | sname | gender |
+------+-------+--------+
| S001 | Alice | Female |
| S002 | Bob   | Male   |
```

```
| S003 | Carol | Female |
+------+-------+--------+
3 rows in set (0.00 sec)
```

2. Obtain the Names of female students who have borrowed “Database” books.

```
mysql> select student.sid,student.sname,student.gender from student join borrows on
student.sid = borrows.sid join books on borrows.bid = books.bid where student.gender =
"Female" and books.title="DB Mgmt";
+------+-------+--------+
| sid  | sname | gender |
+------+-------+--------+
| S001 | Alice | Female |
| S003 | Carol | Female |
+------+-------+--------+
2 rows in set (0.00 sec)
```

3. Find the number of books borrowed by each student. Display the student details along with the number of books.

```
mysql> select borrows.sid,count(borrows.number) from borrows join student on student.sid =
borrows.sid join books on books.bid = borrows.bid group by borrows.sid;
+------+----------------------+
| sid  | count(borrows.number) |
+------+----------------------+
| S001 |                    2 |
| S003 |                    1 |
| S002 |                    1 |
| S004 |                    1 |
+------+----------------------+
4 rows in set (0.00 sec)
```