1NF:

```
mysql> CREATE TABLE EMP(SLNO INT NOT NULL PRIMARY KEY,EMP_ID INT, EMP_NAME VARCHAR(20), EMP_PHONE INT);
Query OK, 0 rows affected (0.10 sec)

mysql> DESC EMP;
+-----------+-------------+------+-----+---------+-------+
| Field     | Type        | Null | Key | Default | Extra |
+-----------+-------------+------+-----+---------+-------+
| SLNO      | int         | NO   | PRI | NULL    |       |
| EMP_ID    | int         | YES  |     | NULL    |       |
| EMP_NAME  | varchar(20) | YES  |     | NULL    |       |
| EMP_PHONE | int         | YES  |     | NULL    |       |
+-----------+-------------+------+-----+---------+-------+
4 rows in set (0.01 sec)

mysql> INSERT INTO EMP VALUES (111,6001,'ABHI',987652340);
Query OK, 1 row affected (0.01 sec)

mysql> INSERT INTO EMP VALUES (112,6002,'ARUN',922252340);
Query OK, 1 row affected (0.01 sec)

mysql> INSERT INTO EMP VALUES (113,6003,'ANU',922252340);
Query OK, 1 row affected (0.01 sec)

mysql> INSERT INTO EMP VALUES (114,NULL,NULL,922252340);
Query OK, 1 row affected (0.00 sec)
```

```
mysql> SELECT * FROM EMP;
+------+--------+----------+-----------+
| SLNO | EMP_ID | EMP_NAME | EMP_PHONE |
+------+--------+----------+-----------+
| 111  | 6001   | ABHI     | 987652340 |
| 112  | 6002   | ARUN     | 922252340 |
| 113  | 6003   | ANU      | 922252340 |
| 114  | NULL   | NULL     | 922252340 |
+------+--------+----------+-----------+
4 rows in set (0.00 sec)
```

```
mysql> CREATE TABLE EMP1(EMP_ID INT NOT NULL,EMP_NAME VARCHAR(20),EMP_PHONE INT);
Query OK, 0 rows affected (0.08 sec)

mysql> INSERT INTO EMP1 VALUES (6001,'ABHI',987652340);
Query OK, 1 row affected (0.01 sec)

mysql> INSERT INTO EMP1 VALUES (6002,'ARUN',922252430);
Query OK, 1 row affected (0.01 sec)

mysql> INSERT INTO EMP1 VALUES (6003,'ANU',922252430);
Query OK, 1 row affected (0.00 sec)

mysql> INSERT INTO EMP1 VALUES (6003,'ANU',922252430);
Query OK, 1 row affected (0.01 sec)

mysql> SELECT * FROM EMP1L
    -> SELECT * FROM EMP1;
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near 'SE
LECT * FROM EMP1' at line 2
mysql> SELECT * FROM EMP1;
+--------+----------+-----------+
| EMP_ID | EMP_NAME | EMP_PHONE |
+--------+----------+-----------+
| 6001   | ABHI     | 987652340 |
| 6002   | ARUN     | 922252430 |
| 6003   | ANU      | 922252430 |
| 6003   | ANU      | 922252430 |
+--------+----------+-----------+
4 rows in set (0.00 sec)
```

```
mysql> SELECT * FROM EMP;
+------+--------+----------+-----------+
| SLNO | EMP_ID | EMP_NAME | EMP_PHONE |
+------+--------+----------+-----------+
| 111  | 6001   | ABHI     | 987652340 |
| 112  | 6002   | ARUN     | 922252340 |
| 113  | 6003   | ANU      | 922252340 |
| 114  | NULL   | NULL     | 922252340 |
+------+--------+----------+-----------+
4 rows in set (0.00 sec)

mysql> SELECT * FROM EMP1;
+--------+----------+-----------+
| EMP_ID | EMP_NAME | EMP_PHONE |
+--------+----------+-----------+
| 6001   | ABHI     | 987652340 |
| 6002   | ARUN     | 922252430 |
| 6003   | ANU      | 922252430 |
| 6003   | ANU      | 922252430 |
+--------+----------+-----------+
4 rows in set (0.00 sec)

mysql> SELECT * FROM EMP1 WHERE EMP_ID=6003;
+--------+----------+-----------+
| EMP_ID | EMP_NAME | EMP_PHONE |
+--------+----------+-----------+
| 6003   | ANU      | 922252430 |
| 6003   | ANU      | 922252430 |
+--------+----------+-----------+
2 rows in set (0.00 sec)
```

2NF:

```
mysql> CREATE TABLE STD1(SID INT PRIMARY KEY,ID INT,BOOKID INT, BRANCH VARCHAR(10),MARKS INT,FOREIGN KEY(ID) REFERENCES LIBRARY(ID),FOREIGN KEY(BOOKID) R
ENCES BOOKS(BOOKID));
Query OK, 0 rows affected (0.08 sec)

mysql> DESC STD1;
+--------+-------------+------+-----+---------+-------+
| Field  | Type        | Null | Key | Default | Extra |
+--------+-------------+------+-----+---------+-------+
| SID    | int         | NO   | PRI | NULL    |       |
| ID     | int         | YES  | MUL | NULL    |       |
| BOOKID | int         | YES  | MUL | NULL    |       |
| BRANCH | varchar(10) | YES  |     | NULL    |       |
| MARKS  | int         | YES  |     | NULL    |       |
+--------+-------------+------+-----+---------+-------+
5 rows in set (0.01 sec)
```

```
mysql> CREATE TABLE LIBRARY(ID INT PRIMARY KEY, NAME VARCHAR(20));
Query OK, 0 rows affected (0.24 sec)

mysql> DESC LIBRARY;
+-------+-------------+------+-----+---------+-------+
| Field | Type        | Null | Key | Default | Extra |
+-------+-------------+------+-----+---------+-------+
| ID    | int         | NO   | PRI | NULL    |       |
| NAME  | varchar(20) | YES  |     | NULL    |       |
+-------+-------------+------+-----+---------+-------+
2 rows in set (0.02 sec)

mysql> CREATE TABLE BOOKS(BOOKID INT PRIMARY KEY, BOOKNAME VARCHAR(20));
Query OK, 0 rows affected (0.06 sec)

mysql> DESC BOOKS;
+----------+-------------+------+-----+---------+-------+
| Field    | Type        | Null | Key | Default | Extra |
+----------+-------------+------+-----+---------+-------+
| BOOKID   | int         | NO   | PRI | NULL    |       |
| BOOKNAME | varchar(20) | YES  |     | NULL    |       |
+----------+-------------+------+-----+---------+-------+
2 rows in set (0.00 sec)
```

Inserting values in the table library:

```
mysql> INSERT INTO LIBRARY VALUES (11,'AK');
Query OK, 1 row affected (0.01 sec)

mysql> INSERT INTO LIBRARY VALUES (12,'BK');
Query OK, 1 row affected (0.00 sec)

mysql> INSERT INTO LIBRARY VALUES (13,'CK');
Query OK, 1 row affected (0.01 sec)

mysql> INSERT INTO LIBRARY VALUES (14,'DK');
Query OK, 1 row affected (0.01 sec)

mysql> SELECT * FROM LIBRARY;
+----+------+
| ID | NAME |
+----+------+
| 11 | AK   |
| 12 | BK   |
| 13 | CK   |
| 14 | DK   |
+----+------+
4 rows in set (0.00 sec)
```

Inserting values in to the table books:

```
mysql> INSERT INTO BOOKS(21,'PYTHON');
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near '21
,'PYTHON')' at line 1
mysql> INSERT INTO BOOKS VALUES(21,'PYTHON');
Query OK, 1 row affected (0.29 sec)

mysql> INSERT INTO BOOKS VALUES(22,'JAVA');
Query OK, 1 row affected (0.00 sec)

mysql> INSERT INTO BOOKS VALUES(23,'SQL');
Query OK, 1 row affected (0.00 sec)

mysql> INSERT INTO BOOKS VALUES(24,'DBMS');
Query OK, 1 row affected (0.01 sec)

mysql> SELECT * FROM BOOKS;
+--------+----------+
| BOOKID | BOOKNAME |
+--------+----------+
|     21 | PYTHON   |
|     22 | JAVA     |
|     23 | SQL      |
|     24 | DBMS     |
+--------+----------+
4 rows in set (0.00 sec)
```

Inserting values in to the table std1:

```
5 rows in set (0.01 sec)

mysql> INSERT INTO STD1 VALUES (1,11,21,'CSE',25)
    -> ;
Query OK, 1 row affected (0.01 sec)

mysql> INSERT INTO STD1 VALUES (2,11,22,'EC',24);
Query OK, 1 row affected (0.01 sec)

mysql> INSERT INTO STD1 VALUES (3,12,23,'EC',47);
Query OK, 1 row affected (0.01 sec)

mysql> INSERT INTO STD1 VALUES 4,13,24,'EC',47);
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near '4,
13,24,'EC',47)' at line 1
mysql> INSERT INTO STD1 VALUES (4,13,24,'EC',47);
Query OK, 1 row affected (0.01 sec)
```

```
mysql> SELECT * FROM STD1;
+-----+-----+--------+--------+-------+
| SID | ID  | BOOKID | BRANCH | MARKS |
+-----+-----+--------+--------+-------+
|   1 |  11 |     21 | CSE    |    25 |
|   2 |  11 |     22 | EC     |    24 |
|   3 |  12 |     23 | EC     |    47 |
|   4 |  13 |     24 | EC     |    47 |
|   5 |  13 |     24 | CV     |    20 |
+-----+-----+--------+--------+-------+
5 rows in set (0.00 sec)
```

MySQL 8.0 Command Line Client

TABLES DESC:

```
mysql> SELECT * FROM LIBRARY;
+----+------+
| ID | NAME |
+----+------+
| 11 | AK   |
| 12 | BK   |
| 13 | CK   |
| 14 | DK   |
+----+------+
4 rows in set (0.01 sec)

mysql> SELECT * FROM BOOKS;
+--------+----------+
| BOOKID | BOOKNAME |
+--------+----------+
|     21 | PYTHON   |
|     22 | JAVA     |
|     23 | SQL      |
|     24 | DBMS     |
+--------+----------+
4 rows in set (0.00 sec)

mysql> SELECT * FROM STD1;
+-----+-----+--------+--------+-------+
| SID | ID  | BOOKID | BRANCH | MARKS |
+-----+-----+--------+--------+-------+
|   1 |  11 |     21 | CSE    |    25 |
|   2 |  11 |     22 | EC     |    24 |
|   3 |  12 |     23 | EC     |    47 |
|   4 |  13 |     24 | EC     |    47 |
|   5 |  13 |     24 | CV     |    20 |
+-----+-----+--------+--------+-------+
5 rows in set (0.00 sec)
```

QUERIES:


```
MySQL 6.0 Command Line Client

mysql> select NAME FROM LIBRARY WHERE ID IN (SELECT ID FROM STD1 WHERE SID=1);
+------+
| NAME |
+------+
| AK   |
+------+
1 row in set (0.00 sec)

mysql> SELECT * FROM STD1 WHERE ID=11;
+-----+-----+--------+--------+-------+
| SID | ID  | BOOKID | BRANCH | MARKS |
+-----+-----+--------+--------+-------+
|   1 | 11  |     21 | CSE    |    25 |
|   2 | 11  |     22 | EC     |    24 |
+-----+-----+--------+--------+-------+
2 rows in set (0.00 sec)

mysql> SELECT * FROM STD1 WHERE ID=11 AND BRANCH='EC';
+-----+-----+--------+--------+-------+
| SID | ID  | BOOKID | BRANCH | MARKS |
+-----+-----+--------+--------+-------+
|   2 | 11  |     22 | EC     |    24 |
+-----+-----+--------+--------+-------+
1 row in set (0.00 sec)

mysql> SELECT * FROM STD1 WHERE BRANCH='EC';
+-----+-----+--------+--------+-------+
| SID | ID  | BOOKID | BRANCH | MARKS |
+-----+-----+--------+--------+-------+
|   2 | 11  |     22 | EC     |    24 |
|   3 | 12  |     23 | EC     |    47 |
|   4 | 13  |     24 | EC     |    47 |
+-----+-----+--------+--------+-------+
```

Z

3NF:

```
Rows matched: 1  Changed: 1  Warnings: 0

mysql> DESC STD1;
+------------+-------------+------+-----+---------+-------+
| Field      | Type        | Null | Key | Default | Extra |
+------------+-------------+------+-----+---------+-------+
| SID        | int         | NO   | PRI | NULL    |       |
| ID         | int         | YES  | MUL | NULL    |       |
| BOOKID     | int         | YES  | MUL | NULL    |       |
| BRANCH     | varchar(10) | YES  |     | NULL    |       |
| MARKS      | int         | YES  |     | NULL    |       |
| EXAM_NAME  | varchar(20) | YES  |     | NULL    |       |
| EXAM_MARKS | varchar(20) | YES  |     | NULL    |       |
+------------+-------------+------+-----+---------+-------+
7 rows in set (0.00 sec)
```

```
7 rows in set (0.00 sec)

mysql> DESC LIBRARY;
+-------+-------------+------+-----+---------+-------+
| Field | Type        | Null | Key | Default | Extra |
+-------+-------------+------+-----+---------+-------+
| ID    | int         | NO   | PRI | NULL    |       |
| NAME  | varchar(20) | YES  |     | NULL    |       |
+-------+-------------+------+-----+---------+-------+
2 rows in set (0.00 sec)

mysql> DESC BOOKS;
+----------+-------------+------+-----+---------+-------+
| Field    | Type        | Null | Key | Default | Extra |
+----------+-------------+------+-----+---------+-------+
| BOOKID   | int         | NO   | PRI | NULL    |       |
| BOOKNAME | varchar(20) | YES  |     | NULL    |       |
+----------+-------------+------+-----+---------+-------+
2 rows in set (0.00 sec)

mysql> DESC EXAM1;
+------------+-------------+------+-----+---------+-------+
| Field      | Type        | Null | Key | Default | Extra |
+------------+-------------+------+-----+---------+-------+
| IT         | int         | NO   | PRI | NULL    |       |
| EXAM_NAME  | varchar(20) | YES  |     | NULL    |       |
| EXAM_MARKS | varchar(20) | YES  |     | NULL    |       |
+------------+-------------+------+-----+---------+-------+
3 rows in set (0.01 sec)

mysql>
```