

create database named as cdac where there will be

1st table named designation_master including design_code and design_name,

2nd table named department_master including dept_code dept_name,

third table named as student_master including stud_code, stud_name, dept_code, stud_dob, stud_address,

fifth table named as student_marks including stud_code, stud_year, sub_1, sub_2, sub_3,

sixth table named as staff_master including staff_code, staff_name, design_code, dept_code, hire_date, staff_dob, staff_address, mgr_code, staff_sal,

seventh table named as book_master including book_name, book_code, book_year, book_auth .

and last table named as book_trans including book_code, stud_code, staff_code, issue_date, return_date, actual_return date

create database cdac; use cdac;

designation master

create table designation_master (design_code int primary key, design_name varchar(50) not null);

department master

create table department_master (dept_code int primary key, dept_name varchar(50) not null);

student master

create table student_master (stud_code int primary key, stud_name varchar(50) not null, dept_code int, stud_dob date, stud_address varchar(255), foreign key (dept_code) references department_master(dept_code));

student marks

create table student_marks (stud_code int, stud_year int, sub_1 int, sub_2 int, sub_3 int, primary key (stud_code, stud_year), foreign key (stud_code) references student_master(stud_code));

staff master

create table staff_master (staff_code int primary key, staff_name varchar(50) not null, design_code int, dept_code int, hire_date date, staff_dob date, staff_address varchar(255), mgr_code int, staff_sal decimal(10, 2), foreign key (design_code) references designation_master(design_code), foreign key (dept_code) references department_master(dept_code), foreign key (mgr_code) references staff_master(staff_code));

book master

create table book_master (book_code int primary key, book_name varchar(50) not null, book_year int, book_auth varchar(50));

book transactions

create table book_trans (book_code int, stud_code int, staff_code int, issue_date date, return_date date, actual_return_date date,
primary key (book_code, stud_code, staff_code, issue_date), foreign key (book_code) references book_master(book_code),
foreign key (stud_code) references student_master(stud_code), foreign key (staff_code) references staff_master(staff_code));

```
C:\Windows\system32\cmd.exe - "C:\Program Files\MySQL\MySQL Server 8.0\bin\mysql.exe" -u root -p
Microsoft Windows [Version 10.0.19045.4780]
(c) Microsoft Corporation. All rights reserved.

C:\Users\ditiss>"C:\Program Files\MySQL\MySQL Server 8.0\bin\mysql.exe" -u root -p
Enter password: ****
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 46
Server version: 8.0.33 MySQL Community Server - GPL

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owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> CREATE DATABASE cdac; USE cdac;
Query OK, 1 row affected (0.09 sec)

Database changed
mysql> use cdac;
Database changed
mysql> CREATE TABLE designation_master ( design_code INT PRIMARY KEY, design_name VARCHAR(50) NOT NULL );
Query OK, 0 rows affected (0.21 sec)

mysql> CREATE TABLE department_master ( dept_code INT PRIMARY KEY, dept_name VARCHAR(50) NOT NULL );
Query OK, 0 rows affected (0.24 sec)

mysql> CREATE TABLE student_master ( stud_code INT PRIMARY KEY, stud_name VARCHAR(50) NOT NULL, dept_code INT, stud_dob DATE, stud_address VARCHAR(255), FOREIGN KEY (dept_code) REFERENCES departmen
t_master(dept_code) );
Query OK, 0 rows affected (0.33 sec)

mysql> CREATE TABLE student_marks ( stud_code INT, stud_year INT, sub_1 INT, sub_2 INT, sub_3 INT, PRIMARY KEY (stud_code, stud_year), FOREIGN KEY (stud_code) REFERENCES student_master(stud_code) )
;
Query OK, 0 rows affected (0.35 sec)

mysql> CREATE TABLE staff_master ( staff_code INT PRIMARY KEY, staff_name VARCHAR(50) NOT NULL, design_code INT, dept_code INT, hire_date DATE, staff_dob DATE, staff_address VARCHAR(255), mgr_code
INT, staff_sal DECIMAL(10, 2), FOREIGN KEY (design_code) REFERENCES designation_master(design_code), FOREIGN KEY (dept_code) REFERENCES department_master(dept_code), FOREIGN KEY (mgr_code) REFERENC
ES staff_master(staff_code) );
Query OK, 0 rows affected (0.54 sec)

mysql> CREATE TABLE book_master ( book_code INT PRIMARY KEY, book_name VARCHAR(50) NOT NULL, book_year INT, book_auth VARCHAR(50) );
Query OK, 0 rows affected (0.30 sec)

mysql> CREATE TABLE book_trans ( book_code INT, stud_code INT, staff_code INT, issue_date DATE, return_date DATE, actual_return_date DATE, PRIMARY KEY (book_code, stud_code, staff_code, issue_date)
, FOREIGN KEY (book_code) REFERENCES book_master(book_code), FOREIGN KEY (stud_code) REFERENCES student_master(stud_code), FOREIGN KEY (staff_code) REFERENCES staff_master(staff_code) );
Query OK, 0 rows affected (0.33 sec)
```

show tables;

desc book_master;

desc book_trans;

desc department_master;

desc designation_master;

desc staff_master;

desc student_master;

desc student_marks;

C:\Windows\system32\cmd.exe - "C:\Program Files\MySQL\MySQL Server 8.0\bin\mysql.exe" -u root -p

```
issue_date | date | NO | PRI | NULL |
return_date | date | YES | | NULL |
actual_return_date | date | YES | | NULL |
```

0 rows in set (0.00 sec)

mysql> desc department_master;

ERROR 1146 (42S02): Table 'cdac.department_master' doesn't exist

mysql> desc department_master;

```
Field | Type | Null | Key | Default | Extra |
-----+-----+-----+-----+-----+-----+
dept_code | int | NO | PRI | NULL |
dept_name | varchar(50) | NO | | NULL |
```

2 rows in set (0.00 sec)

mysql> desc designation_master;

```
Field | Type | Null | Key | Default | Extra |
-----+-----+-----+-----+-----+
design_code | int | NO | PRI | NULL |
design_name | varchar(50) | NO | | NULL |
```

2 rows in set (0.00 sec)

mysql> desc staff_master;

```
Field | Type | Null | Key | Default | Extra |
-----+-----+-----+-----+-----+
staff_code | int | NO | PRI | NULL |
staff_name | varchar(50) | NO | | NULL |
design_code | int | YES | MUL | NULL |
dept_code | int | YES | MUL | NULL |
hire_date | date | YES | | NULL |
staff_dob | date | YES | | NULL |
staff_address | varchar(255) | YES | | NULL |
mgr_code | int | YES | MUL | NULL |
staff_sal | decimal(10,2) | YES | | NULL |
```

9 rows in set (0.00 sec)

mysql> desc student_master;

```
Field | Type | Null | Key | Default | Extra |
-----+-----+-----+-----+-----+
stud_code | int | NO | PRI | NULL |
stud_name | varchar(50) | NO | | NULL |
dept_code | int | YES | MUL | NULL |
stud_dob | date | YES | | NULL |
stud_address | varchar(255) | YES | | NULL |
```

5 rows in set (0.00 sec)

C:\Windows\system32\cmd.exe - "C:\Program Files\MySQL\MySQL Server 8.0\bin\mysql.exe" -u root -p

```
mysql> CREATE TABLE book_trans ( book_code INT, stud_code INT, staff_code INT, issue_date DATE, return_date DATE, actual_return_date DATE, PRIMARY KEY (book_code, stud_code, staff_code, issue_date)
, FOREIGN KEY (book_code) REFERENCES book_master(book_code), FOREIGN KEY (stud_code) REFERENCES student_master(stud_code), FOREIGN KEY (staff_code) REFERENCES staff_master(staff_code) );
Query OK, 0 rows affected (0.33 sec)
```

mysql> show tables;

```
Tables_in_cdac
+-----+
book_master
book_trans
department_master
designation_master
staff_master
student_marks
student_master
```

7 rows in set (0.00 sec)

mysql> desc book_master;

```
Field | Type | Null | Key | Default | Extra |
-----+-----+-----+-----+-----+
book_code | int | NO | PRI | NULL |
book_name | varchar(50) | NO | | NULL |
book_year | int | YES | | NULL |
book_auth | varchar(50) | YES | | NULL |
```

4 rows in set (0.00 sec)

mysql> desc book_trans;

```
Field | Type | Null | Key | Default | Extra |
-----+-----+-----+-----+-----+
book_code | int | NO | PRI | NULL |
stud_code | int | NO | PRI | NULL |
staff_code | int | NO | PRI | NULL |
issue_date | date | NO | PRI | NULL |
return_date | date | YES | | NULL |
actual_return_date | date | YES | | NULL |
```

6 rows in set (0.00 sec)

mysql> desc department_master;

ERROR 1146 (42S02): Table 'cdac.department_master' doesn't exist

mysql> desc department_master;

```
Field | Type | Null | Key | Default | Extra |
-----+-----+-----+-----+-----+
dept_code | int | NO | PRI | NULL |
dept_name | varchar(50) | NO | | NULL |
```

2 rows in set (0.00 sec)

C:\Windows\system32\cmd.exe - "C:\Program Files\MySQL\MySQL Server 8.0\bin\mysql.exe" -u root -p

mysql> desc student_marks;

```
Field | Type | Null | Key | Default | Extra |
-----+-----+-----+-----+-----+
stud_code | int | NO | PRI | NULL |
stud_year | int | NO | PRI | NULL |
sub_1 | int | YES | | NULL |
sub_2 | int | YES | | NULL |
sub_3 | int | YES | | NULL |
```

5 rows in set (0.00 sec)

insert into designation_master (design_code, design_name) values (1, 'senior software engineer'), (2, 'product manager'), (3, 'data scientist'), (4, 'human resources manager'), (5, 'marketing executive');

insert into department_master (dept_code, dept_name) values (1, 'information technology'), (2, 'human resources'), (3, 'marketing'), (4, 'finance'), (5, 'operations');

insert into student_master (stud_code, stud_name, dept_code, stud_dob, stud_address) values (1, 'aishwarya patil', 1, '1998-05-12', '123, pune, maharashtra'), (2, 'rahul sharma', 2, '1999-09-20', '456, delhi, delhi'), (3, 'priya gupta', 3, '2000-02-15', '789, mumbai, maharashtra'), (4, 'ravi kumar', 4, '2001-08-25', '1011, bangalore, karnataka'), (5, 'meera singh', 5, '2002-11-10', '1213, chennai, tamil nadu');

insert into staff_master (staff_code, staff_name, design_code, dept_code, hire_date, staff_dob, staff_address, mgr_code, staff_sal) values (1, 'rajesh mehta', 1, 1, '2015-01-01', '1985-07-20', '123, mumbai, maharashtra', null, 50000.00), (2, 'anjali verma', 2, 2, '2016-02-02', '1986-10-15', '456, delhi, delhi', 1, 45000.00), (3, 'vivek patel', 3, 3, '2017-03-03', '1987-05-08', '789, bangalore, karnataka', 1, 40000.00), (4, 'neha sharma', 4, 4, '2018-04-04', '1988-12-22', '1011, chennai, tamil nadu', 1, 35000.00), (5, 'nikhil kumar', 5, 5, '2019-05-05', '1989-09-06', '1213, hyderabad, telangana', 1, 30000.00);

insert into book_master (book_code, book_name, book_year, book_auth) values (1, 'the palace of illusions', 2011, 'chitra banerjee divakaruni'), (2, 'a suitable boy', 1993, 'vikram seth'), (3, 'the god of small things', 1996, 'arundhati roy'), (4, 'the namesake', 2003, 'jhumpa lahiri'), (5, 'midnights children', 1981, 'salman rushdie');

```
C:\Windows\system32\cmd.exe - "C:\Program Files\MySQL\MySQL Server 8.4\bin\mysql.exe" -u root -p
mysql> INSERT INTO designation_master (design_code, design_name) VALUES (1, 'Senior Software Engineer'), (2, 'Product Manager'), (3, 'Data Scientist'), (4, 'Human Resources Manager'), (5, 'Marketing Executive');
Query OK, 5 rows affected (0.04 sec)
Records: 5 Duplicates: 0 Warnings: 0

mysql> INSERT INTO department_master (dept_code, dept_name) VALUES (1, 'Information Technology'), (2, 'Human Resources'), (3, 'Marketing'), (4, 'Finance'), (5, 'Operations');
Query OK, 5 rows affected (0.06 sec)
Records: 5 Duplicates: 0 Warnings: 0

mysql> CREATE TABLE student_master ( stud_code INT PRIMARY KEY, stud_name VARCHAR(50) NOT NULL, dept_code INT, stud_dob DATE, stud_address VARCHAR(255), FOREIGN KEY (dept_code) REFERENCES department_master(dept_code) );
ERROR 1050 (42S01): Table 'student_master' already exists

mysql> INSERT INTO student_master (stud_code, stud_name, dept_code, stud_dob, stud_address) VALUES (1, 'Aishwarya Patil', 1, '1998-05-12', '123, Pune, Maharashtra'), (2, 'Rahul Sharma', 2, '1999-09-20', '456, Delhi, Delhi'), (3, 'Priya Gupta', 3, '2000-02-15', '789, Mumbai, Maharashtra'), (4, 'Ravi Kumar', 4, '2001-08-25', '1011, Bangalore, Karnataka'), (5, 'Meera Singh', 5, '2002-11-10', '1213, Chennai, Tamil Nadu');
Query OK, 5 rows affected (0.04 sec)
Records: 5 Duplicates: 0 Warnings: 0

mysql> INSERT INTO staff_master (staff_code, staff_name, design_code, dept_code, hire_date, staff_dob, staff_address, mgr_code, staff_sal) VALUES (1, 'Rajesh Mehta', 1, 1, '2015-01-01', '1985-07-20', '123, Mumbai, Maharashtra', NULL, 50000.00), (2, 'Anjali Verma', 2, 2, '2016-02-02', '1986-10-15', '456, Delhi, Delhi', 1, 45000.00), (3, 'Vivek Patel', 3, 3, '2017-03-03', '1987-05-08', '789, Bangalore, Karnataka', 1, 40000.00), (4, 'Neha Sharma', 4, 4, '2018-04-04', '1988-12-22', '1011, Chennai, Tamil Nadu', 1, 35000.00), (5, 'Nikhil Kumar', 5, 5, '2019-05-05', '1989-09-06', '1213, Hyderabad, Telangana', 1, 30000.00);
Query OK, 5 rows affected (0.09 sec)
Records: 5 Duplicates: 0 Warnings: 0

mysql> INSERT INTO book_master (book_code, book_name, book_year, book_auth) values (1, 'The Palace of Illusions', 2011, 'Chitra Banerjee Divakaruni'),
-> (2, 'A Suitable Boy', 1993, 'Vikram Seth'),
-> (3, 'The God of Small Things', 1996, 'Arundhati Roy'),
-> (4, 'The Namesake', 2003, 'Jhumpa Lahiri'),
-> (5, 'Midnight's Children', 1981, 'Salman Rushdie');
-> (4, 'The Namesake', 2003, 'Jhumpa Lahiri'),^C
mysql>
mysql> INSERT INTO book_master (book_code, book_name, book_year, book_auth) values (1, 'The Palace of Illusions', 2011, 'Chitra Banerjee Divakaruni'),
-> (2, 'A Suitable Boy', 1993, 'Vikram Seth'),
-> (3, 'The God of Small Things', 1996, 'Arundhati Roy'),
-> (4, 'The Namesake', 2003, 'Jhumpa Lahiri'),
-> (5, 'Midnight's Children', 1981, 'Salman Rushdie');
Query OK, 5 rows affected (0.05 sec)
Records: 5 Duplicates: 0 Warnings: 0
```

drop table students_marks;

```

Select C:\Windows\system32\cmd.exe - "C:\Program Files\MySQL\MySQL Server 8.4\bin\mysql.exe" -u root -p
ode"))
mysql> select* from book_trans;
Empty set (0.00 sec)

mysql> desc book_trans;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| book_code | int | NO | PRI | NULL | |
| stud_code | int | NO | PRI | NULL | |
| staff_code | int | NO | PRI | NULL | |
| issue_date | date | NO | PRI | NULL | |
| return_date | date | YES | | NULL | |
| actual_return_date | date | YES | | NULL | |
+-----+-----+-----+-----+-----+-----+
6 rows in set (0.00 sec)

mysql> desc book_master;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| book_code | int | NO | PRI | NULL | |
| book_name | varchar(50) | NO | | NULL | |
| book_year | int | YES | | NULL | |
| book_auth | varchar(50) | YES | | NULL | |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.00 sec)

mysql> desc department_master;
ERROR 1146 (42S02): Table 'cdac.department_master' doesn't exist
mysql> desc designation_master;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| design_code | int | NO | PRI | NULL | |
| design_name | varchar(50) | NO | | NULL | |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.00 sec)

mysql> desc staff_master;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| staff_code | int | NO | PRI | NULL | |
| staff_name | varchar(50) | NO | | NULL | |
| design_code | int | YES | MUL | NULL | |
| dept_code | int | YES | MUL | NULL | |
| hire_date | date | YES | | NULL | |
| staff_dob | date | YES | | NULL | |
| staff_address | varchar(255) | YES | | NULL | |
| mgr_code | int | YES | MUL | NULL | |
| staff_sal | decimal(10,2) | YES | | NULL | |
+-----+-----+-----+-----+-----+-----+
9 rows in set (0.00 sec)

```

create table student_master_new as select * from student_master;

```

Select C:\Windows\system32\cmd.exe - "C:\Program Files\MySQL\MySQL Server 8.4\bin\mysql.exe" -u root -p
mysql> desc student_master;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| stud_code | int | NO | PRI | NULL | |
| stud_name | varchar(50) | NO | | NULL | |
| dept_code | int | YES | MUL | NULL | |
| stud_dob | date | YES | | NULL | |
| stud_address | varchar(255) | YES | | NULL | |
+-----+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)

mysql> desc student_marks;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| stud_code | int | NO | PRI | NULL | |
| stud_year | int | NO | PRI | NULL | |
| sub_1 | int | YES | | NULL | |
| sub_2 | int | YES | | NULL | |
| sub_3 | int | YES | | NULL | |
+-----+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)

mysql> alter table student_marks drop primary key;
ERROR 1553 (HY000): Cannot drop index 'PRIMARY': needed in a foreign key constraint
mysql> alter table student_marks drop foreign key;
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 '' at line 1
mysql> alter table student_marks drop foreign key fk.stud_code;
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 '.stud_code' at line 1
mysql> alter table student_marks drop foreign key stud_code;
ERROR 1091 (42000): Can't DROP 'stud_code'; check that column/key exists
mysql> alter table book_trans drop primary key;
ERROR 1553 (HY000): Cannot drop index 'PRIMARY': needed in a foreign key constraint
mysql> alter table book_trans drop foreign key;
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 '' at line 1
mysql> drop students_marks;
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 'students_marks' at line 1
mysql> drop table students_marks;
ERROR 1051 (42S02): Unknown table 'cdac.students_marks'
mysql> create table student_master_new as select * from student_master;
Query OK, 5 rows affected (0.36 sec)
Records: 5 Duplicates: 0 Warnings: 0

mysql> drop table student_master;
ERROR 3730 (HY000): Cannot drop table 'student_master' referenced by a foreign key constraint 'student_marks_ibfk_1' on table 'student_marks'.
mysql> alter table student_master drop constraint 'student_marks_ibfk_1';
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 ''student_marks_ibfk_1'' at line 1
mysql> alter table student_master drop foreign key 'student_marks_ibfk_1';
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 ''student_marks_ibfk_1'' at line 1
mysql> alter table student_master drop constraint student_marks_ibfk_1;
ERROR 3940 (HY000): Constraint 'student_marks_ibfk_1' does not exist.
mysql> alter table student_master drop constraint foreign key student_marks_ibfk_1;
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 'foreign key student_marks_ibfk_1' at line

```

drop table student_master;

alter table student_master drop foreign key student_marks_ibfk_1;

alter table student_marks drop foreign key student_marks_ibfk_1;

alter table student_marks drop primary key;

drop table student_master_new;

```
Select C:\Windows\system32\cmd.exe - "C:\Program Files\MySQL\MySQL Server 8.4\bin\mysql.exe" -u root -p

mysql> alter table student_master drop foreign key student_marks_ibfk_1;
ERROR 1064 (42000): Can't DROP 'student_marks_ibfk_1'; check that column/key exists
mysql> alter table student_marks drop foreign key student_marks_ibfk_1;
Query OK, 0 rows affected (0.09 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> desc student_masters
->
ERROR 1146 (42502): Table 'cdac.student_masters' doesn't exist
mysql> desc student_master;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| stud_code | int | NO | PRI | NULL | |
| stud_name | varchar(50) | NO | | NULL | |
| dept_code | int | YES | MUL | NULL | |
| stud_dob | date | YES | | NULL | |
| stud_address | varchar(255) | YES | | NULL | |
+-----+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)

mysql> desc student_marks;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| stud_code | int | NO | PRI | NULL | |
| stud_year | int | NO | PRI | NULL | |
| sub_1 | int | YES | | NULL | |
| sub_2 | int | YES | | NULL | |
| sub_3 | int | YES | | NULL | |
+-----+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)

mysql> alter table student_marks drop primary keys;
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 'keys' at line 1
mysql> alter table student_marks drop primary key;
Query OK, 0 rows affected (0.88 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> drop table student_master_new;
Query OK, 0 rows affected (0.18 sec)

C:\Windows\system32\cmd.exe - "C:\Program Files\MySQL\MySQL Server 8.4\bin\mysql.exe" -u root -p

mysql>
mysql>
mysql>
mysql> INSERT INTO Book_trans (book_code, stud_code, staff_code, issue_date, return_date, actual_return_date)
-> VALUES (1, 101, 201, '2024-09-01', '2024-09-15', '2024-09-17');
ERROR 1452 (23000): Cannot add or update a child row: a foreign key constraint fails ('cdac`.`book_trans', CONSTRAINT 'book_trans_ibfk_2' FOREIGN KEY ('stud_code') REFERENCES 'student_master' ('stud_code'))
mysql> drop table book_trans;
Query OK, 0 rows affected (0.28 sec)

mysql> CREATE TABLE Book_trans ( book_code INT, stud_code INT, staff_code INT, issue_date DATE, return_date DATE, actual_return_date DATE);
Query OK, 0 rows affected (0.40 sec)

mysql> INSERT INTO Book_trans (book_code, stud_code, staff_code, issue_date, return_date, actual_return_date)VALUES (1, 101, 201, '2024-09-01', '2024-09-15', '2024-09-17');
Query OK, 1 row affected (0.06 sec)

mysql> INSERT INTO Book_trans (book_code, stud_code, staff_code, issue_date, return_date, actual_return_date)VALUES (2, 102, 202, '2024-09-05', '2024-09-20', '2024-09-20');
Query OK, 1 row affected (0.05 sec)

mysql> INSERT INTO Book_trans (book_code, stud_code, staff_code, issue_date, return_date, actual_return_date)VALUES (3, 103, 203, '2024-09-08', '2024-09-25', '2024-09-28');
Query OK, 1 row affected (0.05 sec)

mysql> INSERT INTO Book_trans (book_code, stud_code, staff_code, issue_date, return_date, actual_return_date)VALUES (1, 101, 201, '2024-09-01', '2024-09-15', '2024-09-17');
Query OK, 1 row affected (0.09 sec)

mysql> INSERT INTO Book_trans (book_code, stud_code, staff_code, issue_date, return_date, actual_return_date)VALUES (2, 102, 202, '2024-09-05', '2024-09-20', '2024-09-20');
Query OK, 1 row affected (0.03 sec)
```

drop table book_trans;

create table book_trans (book_code int, stud_code int, staff_code int, issue_date date, return_date date, actual_return_date date);

insert into book_trans (book_code, stud_code, staff_code, issue_date, return_date, actual_return_date)values (1, 101, 201, '2024-09-01', '2024-09-15', '2024-09-17');

insert into book_trans (book_code, stud_code, staff_code, issue_date, return_date, actual_return_date)values (2, 102, 202, '2024-09-05', '2024-09-20', '2024-09-20');

insert into book_trans (book_code, stud_code, staff_code, issue_date, return_date, actual_return_date)values (3, 103, 203, '2024-09-08', '2024-09-25', '2024-09-28');

insert into book_trans (book_code, stud_code, staff_code, issue_date, return_date, actual_return_date)values (1, 101, 201, '2024-09-01', '2024-09-15', '2024-09-17');

insert into book_trans (book_code, stud_code, staff_code, issue_date, return_date, actual_return_date)values (2, 102, 202,

```
'2024-09-05', '2024-09-20', '2024-09-20');
```

- Retrieve the details (Name, Salary and dept code) of the employees who are working in department 20, 30 and 40.

```
mysql> select staff_code, staff_name, staff_dob from staff_master where dept_code in (1,2,3);
```

staff_code	staff_name	staff_dob
1	Rajesh Mehta	1985-07-20
2	Anjali Verma	1986-10-15
3	Vivek Patel	1987-05-08

```
3 rows in set (0.00 sec)
```

- List the details of the employees with user defined Column headers.

```
mysql> select book_code as "book_id", book_name as "book_nm", book_year as "publish_year", book_auth as "book_writer" from book_master;
```

book_id	book_nm	publish_year	book_writer
1	The Palace of Illusions	2011	Chitra Banerjee Divakaruni
2	A Suitable Boy	1993	Vikram Seth
3	The God of Small Things	1996	Arundhati Roy
4	The Namesake	2003	Jhumpa Lahiri
5	Midnight's Children	1981	Salman Rushdie

```
5 rows in set (0.00 sec)
```

- Display the code, subjects and total marks for every student. Total Marks will be calculated as Subject1+Subject2+Subject3. (Refer Student_Marks table)

```
mysql> SELECT stud_code, stud_year, (sub_1 + sub_2 + sub_3) AS total_marks FROM student_marks;
```

stud_code	stud_year	total_marks
1	2023	267
2	2023	261
3	2024	262
4	2024	255
5	2023	258

```
5 rows in set (0.00 sec)
```

- List the details of the staff whose designations are either PROFESSOR or LECTURER.

```
mysql> SELECT *FROM staff_master WHERE staff_address LIKE '%&' OR staff_address LIKE '%&';
```

staff_code	staff_name	design_code	dept_code	hire_date	staff_dob	staff_address	mgr_code	staff_sal
1	Rajesh Mehta	1	1	2015-01-01	1985-07-20	123, Mumbai, Maharashtra	NULL	50000.00
3	Vivek Patel	3	3	2017-03-03	1987-05-08	789, Bangalore, Karnataka	1	40000.00
4	Neha Sharma	4	4	2018-04-04	1988-12-22	1011, Chennai, Tamil Nadu	1	35000.00
5	Nikhil Kumar	5	5	2019-05-05	1989-09-06	1213, Hyderabad, Telangana	1	30000.00

```
4 rows in set (0.00 sec)
```

- List the code, name, and department number of the employees who have experience of more than 18 years.

```
mysql> SELECT * FROM book_master WHERE book_year < 1999;
```

book_code	book_name	book_year	book_auth
2	A Suitable Boy	1993	Vikram Seth
3	The God of Small Things	1996	Arundhati Roy
5	Midnight's Children	1981	Salman Rushdie

```
3 rows in set (0.00 sec)
```

- List the name and Designations of the staff who have joined before Jan 2003.

```
mysql> SELECT staff_code, staff_name, dept_code FROM staff_master WHERE hire_date < '2017-01-01';
```

staff_code	staff_name	dept_code
1	Rajesh Mehta	1
2	Anjali Verma	2

```
2 rows in set (0.02 sec)
```

- List the name, designation, and income for 10 years of the employees who are working in departments 10 and 30.

```
mysql> SELECT StaffName, DesignCode, (StaffSal * 10) AS "10 Year Income"
-> FROM StaffMasters
-> WHERE DeptCode IN (201, 203);
```

StaffName	DesignCode	10 Year Income
Alice Adams	101	600005.00
Charlie Clark	103	450007.50

- List the name and experience (in years) of employees who are working as LECTURER.

```
mysql> SELECT
-> SM.StaffName,
-> TIMESTAMPDIFF(YEAR, SM.HireDate, CURDATE()) AS ExperienceYears
-> FROM
-> StaffMasters SM
-> JOIN
-> DesignationMasters DM ON SM.DesignCode = DM.DesignCode
-> WHERE
-> DM.DesignName = 'Lecturer';
```

StaffName	ExperienceYears
Charlie Clark	6

- Display name concatenated with dept code separated by comma and space. Name the column as 'Student Info'.

```
mysql> SELECT CONCAT(StudentName, ', ', DeptCode) AS "Student Info"
-> FROM StudentMasters;
```

Student Info
John Doe, 201
Jane Smith, 202
Emily Davis, 203
Michael Brown, 204
Sarah Johnson, 201
David Wilson, 205
Linda Martinez, 206
James Garcia, 207

8 rows in set (0.01 sec)

- List the Name and Salary of the staff who are earning between 50000 and 100000. Sort them based on their salaries and name.

```
mysql> SELECT StaffName, StaffSal
-> FROM StaffMasters
-> WHERE StaffSal BETWEEN 50000 AND 100000
-> ORDER BY StaffSal, StaffName;
+-----+-----+
| StaffName | StaffSal |
+-----+-----+
| Bob Baker | 50000.00 |
| Alice Adams | 60000.50 |
| Frank Foster | 70000.80 |
| Grace Green | 75000.90 |
+-----+-----+
4 rows in set (0.00 sec)
```

- Display employees who do not have manager.

```
mysql> SELECT StaffName
-> FROM StaffMasters
-> WHERE MgrCode=502;
+-----+
| StaffName |
+-----+
| Diane Duncan |
+-----+
1 row in set (0.00 sec)
```

- Write a query which will display name, department code and date of birth of all students who were born between January 1, 1981 and March 31, 1983. Sort it based on date of birth (ascending)

```
mysql> SELECT StudentName, DeptCode, StudentDOB
-> FROM StudentMasters
-> WHERE StudentDOB BETWEEN '1999-01-01' AND '2005-03-31'
-> ORDER BY StudentDOB;
```

StudentName	DeptCode	StudentDOB
David Wilson	205	1999-09-09
Linda Martinez	206	2000-02-14
John Doe	201	2000-05-15
Michael Brown	204	2000-11-25
Sarah Johnson	201	2001-01-20
Jane Smith	202	2001-03-10
James Garcia	207	2002-06-30
Emily Davis	203	2002-07-18

- Display name and date of birth of students where date of birth must be displayed in the format similar to “January, 12 1981” for those who were born on Saturday or Sunday.

```
mysql> SELECT StudentName,
-> DATE_FORMAT(StudentDOB, '%M, %d %Y') AS DOB
-> FROM StudentMasters
-> WHERE DAYNAME(StudentDOB) IN ('Saturday', 'Sunday');
```

StudentName	DOB
Jane Smith	March, 10 2001
Michael Brown	November, 25 2000
Sarah Johnson	January, 20 2001
James Garcia	June, 30 2002

- Display each staff name and number of months they worked for the organization. Label the column as ‘Months Worked’. Order your result by number of months employed. Round the number of months to closest whole number.

```
mysql> SELECT StaffName,
-> ROUND(TIMESTAMPDIFF(MONTH, HireDate, CURDATE())) AS `Months Worked`
-> FROM StaffMasters
-> ORDER BY `Months Worked`;
```

StaffName	Months Worked
Hank Harris	13
Grace Green	31
Frank Foster	38
Eve Edwards	53
Diane Duncan	57
Charlie Clark	78
Bob Baker	83
Alice Adams	112

8 rows in set (0.00 sec)

- List the details of the employees, whose names start with 'A' and end with 'S'.

```
mysql> SELECT *
-> FROM StaffMasters
-> WHERE StaffName LIKE 'A%' AND StaffName LIKE '%S';
```

StaffCode	StaffName	DesignCode	DeptCode	HireDate	StaffDOB	StaffAddress	MgrCode	StaffSal
401	Alice Adams	101	201	2015-04-12	1980-05-22	123 Main St	501	60000.50

1 row in set (0.00 sec)

- List the name and job of the employees whose names should contain N as the second or third character, and ending with either 'N' or 'S'.

```
mysql> SELECT StaffName, DesignCode
-> FROM StaffMasters
-> WHERE (SUBSTR(StaffName, 2, 1) = 'N' OR SUBSTR(StaffName, 3, 1) = 'N')
-> AND (StaffName LIKE '%N' OR StaffName LIKE '%S');
```

StaffName	DesignCode
Hank Harris	108

- Create a query which will display Staff Name, Salary of each staff. Format the salary to be 15 character long and left padded with '\$'.

```
mysql> SELECT StaffName,
->         LPAD(StaffSal, 15, '$') AS "Formatted Salary"
-> FROM StaffMasters;
```

StaffName	Formatted Salary
Alice Adams	\$\$\$\$\$\$60000.50
Bob Baker	\$\$\$\$\$\$50000.00
Charlie Clark	\$\$\$\$\$\$45000.75
Diane Duncan	\$\$\$\$\$\$40000.25
Eve Edwards	\$\$\$\$\$\$42000.60
Frank Foster	\$\$\$\$\$\$70000.80
Grace Green	\$\$\$\$\$\$75000.90
Hank Harris	\$\$\$\$\$\$47000.45

- List the names of the Employees having '_' character in their name.

```
mysql> SELECT StaffName
-> FROM StaffMasters
-> WHERE StaffName LIKE '%a%';
```

StaffName
Alice Adams
Bob Baker
Charlie Clark
Diane Duncan
Eve Edwards
Frank Foster
Grace Green
Hank Harris

- List the details of the employees who have joined in December (irrespective of the year).

```
mysql> SELECT *
-> FROM StaffMasters
-> WHERE MONTH(HireDate) = 06;
```

StaffCode	StaffName	DesignCode	DeptCode	HireDate	StaffDOB	StaffAddress	MgrCode	StaffSal
406	Frank Foster	106	206	2021-06-18	1987-11-03	987 Cedar St	503	70000.80

1 row in set (0.00 sec)

- Write a query that displays Staff Name, Salary, and Grade of all staff

```
mysql> SELECT StaffName, StaffSal,
->      CASE
->          WHEN StaffSal >= 60000 THEN 'A'
->          WHEN StaffSal BETWEEN 40000 AND 59999 THEN 'B'
->          ELSE 'C'
->      END AS "Grade"
-> FROM StaffMasters;
```

StaffName	StaffSal	Grade
Alice Adams	60000.50	A
Bob Baker	50000.00	B
Charlie Clark	45000.75	B
Diane Duncan	40000.25	B
Eve Edwards	42000.60	B
Frank Foster	70000.80	A
Grace Green	75000.90	A
Hank Harris	47000.45	B

8 rows in set (0.00 sec)

- Write a query which displays Staff Name, Department Code, Department Name, and Salary for all staff who earns more than 20000.

```
mysql> SELECT StaffMasters.StaffName, StaffMasters.DeptCode, DepartmentMasters.DeptName, StaffMasters.StaffSal
-> FROM StaffMasters
-> JOIN DepartmentMasters ON StaffMasters.DeptCode = DepartmentMasters.DeptCode
-> WHERE StaffMasters.StaffSal > 20000;
```

StaffName	DeptCode	DeptName	StaffSal
Alice Adams	201	Computer Science	60000.50
Bob Baker	202	Mechanical Engineering	50000.00
Charlie Clark	203	Electrical Engineering	45000.75
Diane Duncan	204	Civil Engineering	40000.25
Eve Edwards	205	Biotechnology	42000.60
Frank Foster	206	Mathematics	70000.80
Grace Green	207	Physics	75000.90
Hank Harris	208	Chemistry	47000.45

- Write a query to display Staff Name, Department Code, and Department Name for all staff who do not work in Department code 10 and have 'A' in their name.

```
mysql> SELECT StaffMasters.StaffName, StaffMasters.DeptCode, DepartmentMasters.DeptName
-> FROM StaffMasters
-> JOIN DepartmentMasters ON StaffMasters.DeptCode = DepartmentMasters.DeptCode
-> WHERE StaffMasters.DeptCode <> 10 AND StaffMasters.StaffName LIKE '%A%';
```

StaffName	DeptCode	DeptName
Alice Adams	201	Computer Science
Bob Baker	202	Mechanical Engineering
Charlie Clark	203	Electrical Engineering
Diane Duncan	204	Civil Engineering
Eve Edwards	205	Biotechnology
Frank Foster	206	Mathematics
Grace Green	207	Physics
Hank Harris	208	Chemistry

- Display Staff Code, Staff Name, Department Name, and his manager's number and name. Label the columns Staff#, Staff, Mgr#, Manager.

```
mysql> SELECT S1.StaffCode AS "Staff#", S1.StaffName AS "Staff", D.DeptName, S1.MgrCode AS "Mgr#", S2.StaffName AS "Manager"
-> FROM StaffMasters S1
-> LEFT JOIN StaffMasters S2 ON S1.MgrCode = S2.StaffCode
-> JOIN DepartmentMasters D ON S1.DeptCode = D.DeptCode;
```

Staff#	Staff	DeptName	Mgr#	Manager
401	Alice Adams	Computer Science	501	NULL
402	Bob Baker	Mechanical Engineering	501	NULL
403	Charlie Clark	Electrical Engineering	501	NULL
404	Diane Duncan	Civil Engineering	502	NULL
405	Eve Edwards	Biotechnology	503	NULL
406	Frank Foster	Mathematics	503	NULL
407	Grace Green	Physics	504	NULL
408	Hank Harris	Chemistry	504	NULL

- Create a query that will display Student Code, Student Name, Department Name, Subject1, Subject2, and Subject3 for all students who are getting 60 and above in each subject from department 10 and 20.

```
mysql> SELECT
-> SM.StudentCode,
-> SM.StudentName,
-> DM.DeptName,
-> MAX(CASE WHEN M.Subject = 'Subject1' THEN M.Marks ELSE NULL END) AS Subject1,
-> MAX(CASE WHEN M.Subject = 'Subject2' THEN M.Marks ELSE NULL END) AS Subject2,
-> MAX(CASE WHEN M.Subject = 'Subject3' THEN M.Marks ELSE NULL END) AS Subject3
-> FROM
-> StudentMasters SM
-> JOIN
-> DepartmentMasters DM ON SM.DeptCode = DM.DeptCode
-> JOIN
-> StudentMarks M ON SM.StudentCode = M.StudentCode
-> WHERE
-> DM.DeptCode IN (201, 204)
-> GROUP BY
-> SM.StudentCode, SM.StudentName, DM.DeptName
-> HAVING
-> MAX(CASE WHEN M.Subject = 'Subject1' THEN M.Marks ELSE NULL END) >= 60
-> AND MAX(CASE WHEN M.Subject = 'Subject2' THEN M.Marks ELSE NULL END) >= 60
-> AND MAX(CASE WHEN M.Subject = 'Subject3' THEN M.Marks ELSE NULL END) >= 60;
Empty set (0.00 sec)
```

- Create a query that will display Student Code, Student Name, Book Code, and Book Name for

all students whose expected book return date is today.

```
mysql> SELECT
->     S.StudentCode,
->     S.StudentName,
->     B.BdCode,
->     B.BookName
-> FROM
->     BookTransactions T
-> JOIN
->     StudentMasters S ON T.StudentCode = S.StudentCode
-> JOIN
->     BookMasters B ON T.BookCode = B.BdCode
-> WHERE
->     T.BookExpectedReturnDate = CURDATE();
+-----+-----+-----+-----+
| StudentCode | StudentName | BdCode | BookName |
+-----+-----+-----+-----+
|          305 | Sarah Johnson |      505 | Operating System Concepts |
+-----+-----+-----+-----+
1 row in set (0.00 sec)
```

•Create a query that will display Staff Code, Staff Name, Department Name, Designation, Book Code, Book Name, and Issue Date. For only those staff who have taken any book in last 30 days

```
mysql> SELECT
->     SM.StaffCode,
->     SM.StaffName,
->     DM.DeptName,
->     D.DesignName AS Designation,
->     BT.BookCode,
->     BM.BookName,
->     BT.BookIssueDate AS IssueDate
-> FROM
->     BookTransactions BT
-> JOIN
->     StaffMasters SM ON BT.StaffCode = SM.StaffCode
-> JOIN
->     DepartmentMasters DM ON SM.DeptCode = DM.DeptCode
-> JOIN
->     DesignationMasters D ON SM.DesignCode = D.DesignCode
-> JOIN
->     BookMasters BM ON BT.BookCode = BM.BdCode
-> WHERE
->     BT.BookIssueDate >= CURDATE() - INTERVAL 60 DAY;
+-----+-----+-----+-----+-----+-----+-----+
| StaffCode | StaffName | DeptName | Designation | BookCode | BookName | IssueDate |
+-----+-----+-----+-----+-----+-----+-----+
|          408 | Hank Harris | Chemistry | Research Assistant |          508 | Compiler Design | 2024-08-01 |
+-----+-----+-----+-----+-----+-----+-----+
1 row in set (0.00 sec)
```

