

SQL queries to extract and analyze data from a database:

```
mysql> create table student(  
-> reg_no int primary key,  
-> name varchar(50),  
-> dob int,  
-> mark1 int,  
-> mark2 int,  
-> mark3 int,  
-> dept varchar(50)  
-> );  
Query OK, 0 rows affected (0.17 sec)
```

```
mysql> INSERT INTO Student (reg_no, name, dob, mark1, mark2, mark3, dept)  
-> VALUES  
-> (101, 'Alice', '2000-05-15', 85, 90, 88, 'Computer Science'),  
-> (102, 'Bob', '2001-03-20', 70, 75, 80, 'Mechanical'),  
-> (103, 'Charlie', '1999-07-25', 92, 95, 93, 'Electrical'),  
-> (104, 'David', '2002-11-10', 60, 65, 70, 'Civil'),  
-> (105, 'Eva', '2001-08-30', 88, 92, 85, 'Computer Science'),  
-> (106, 'Fay', '2000-04-05', 78, 82, 80, 'Electrical'),  
-> (107, 'George', '1998-12-12', 90, 89, 91, 'Mechanical'),  
-> (108, 'Hannah', '2003-01-23', 85, 88, 87, 'Civil'),  
-> (109, 'Ivy', '2000-10-18', 95, 93, 97, 'Computer Science'),  
-> (110, 'Jack', '2002-06-14', 65, 70, 72, 'Mechanical');  
Query OK, 10 rows affected (0.02 sec)  
Records: 10 Duplicates: 0 Warnings: 0
```

```
mysql> CREATE TABLE department (
->     dept_id INT PRIMARY KEY AUTO_INCREMENT,
->     dept_name VARCHAR(50) UNIQUE NOT NULL,
->     manager_name VARCHAR(50),
->     location VARCHAR(50),
->     budget DECIMAL(10, 2),
->     founded_year INT
-> );
Query OK, 0 rows affected (0.07 sec)
```

```
mysql> INSERT INTO department (dept_name, manager_name, location, budget, founded_year) VALUES
-> ('Computer Science', 'Dr. Rajesh Kumar', 'Chennai', 150000.00, 1995),
-> ('Electrical Engineering', 'Prof. Priya Sharma', 'Mumbai', 120000.50, 2001),
-> ('Mechanical Engineering', 'Mr. Arvind Patel', 'Delhi', 135000.75, 1998),
-> ('Civil Engineering', 'Ms. Swati Verma', 'Kolkata', 110000.25, 2005);
Query OK, 4 rows affected (0.01 sec)
Records: 4  Duplicates: 0  Warnings: 0
```

```
mysql> SELECT Name FROM Student WHERE mark1 = (SELECT MAX(mark1) FROM Student)
-> OR mark2 = (SELECT MAX(mark2) FROM Student)
-> OR mark3 = (SELECT MAX(mark3) FROM Student);
+-----+
| Name |
+-----+
| Charlie |
| Ivy |
+-----+
2 rows in set (0.01 sec)
```

```
mysql> SELECT Dept, COUNT(*) FROM Student GROUP BY Dept;
+-----+-----+
| Dept | COUNT(*) |
+-----+-----+
| Computer Science | 3 |
| Mechanical | 3 |
| Electrical | 2 |
| Civil | 2 |
+-----+-----+
4 rows in set (0.01 sec)
```

```
mysql> SELECT Name FROM Student WHERE mark1 = (SELECT MIN(mark1) FROM Student)
-> OR mark2 = (SELECT MIN(mark2) FROM Student)
-> OR mark3 = (SELECT MIN(mark3) FROM Student);
+-----+
| Name |
+-----+
| David |
+-----+
1 row in set (0.00 sec)
```

```
mysql> SELECT Name FROM Student WHERE mark1 = (SELECT MAX(mark1) FROM Student)
-> OR mark2 = (SELECT MAX(mark2) FROM Student)
-> OR mark3 = (SELECT MAX(mark3) FROM Student);
```

```
+-----+
| Name |
+-----+
| Charlie |
| Ivy |
+-----+
```

2 rows in set (0.01 sec)

```
mysql> SELECT Dept, COUNT(*) FROM Student GROUP BY Dept;
```

```
+-----+-----+
| Dept | COUNT(*) |
+-----+-----+
| Computer Science | 3 |
| Mechanical | 3 |
| Electrical | 2 |
| Civil | 2 |
+-----+-----+
```

4 rows in set (0.01 sec)

```
mysql> SELECT Name FROM Student WHERE mark1 = (SELECT MIN(mark1) FROM Student)
-> OR mark2 = (SELECT MIN(mark2) FROM Student)
-> OR mark3 = (SELECT MIN(mark3) FROM Student);
```

```
+-----+
| Name |
+-----+
| David |
+-----+
```

1 row in set (0.00 sec)

```
mysql> SELECT * FROM Student WHERE Dept = 'Computer Science';
```

```
+-----+-----+-----+-----+-----+-----+-----+
| reg_no | name | dob | mark1 | mark2 | mark3 | dept |
+-----+-----+-----+-----+-----+-----+-----+
| 101 | Alice | 2000-05-15 | 85 | 90 | 88 | Computer Science |
| 105 | Eva | 2001-08-30 | 88 | 92 | 85 | Computer Science |
| 109 | Ivy | 2000-10-18 | 95 | 93 | 97 | Computer Science |
+-----+-----+-----+-----+-----+-----+-----+
```

3 rows in set (0.01 sec)

```
mysql> UPDATE Student
```

```
-> SET total = mark1 + mark2 + mark3, GPA = (total / 3);
ERROR 1054 (42S22): Unknown column 'total' in 'field list'
```

```
mysql> SELECT * FROM Student WHERE Name LIKE 'A%';
```

```
+-----+-----+-----+-----+-----+-----+-----+
| reg_no | name | dob | mark1 | mark2 | mark3 | dept |
+-----+-----+-----+-----+-----+-----+-----+
| 101 | Alice | 2000-05-15 | 85 | 90 | 88 | Computer Science |
+-----+-----+-----+-----+-----+-----+-----+
```

1 row in set (0.00 sec)

```
mysql> SELECT * FROM Student WHERE mark1 = mark2 AND mark2 = mark3;
Empty set (0.00 sec)
```

```
mysql> SELECT UPPER(Name) AS Name FROM Student;
```

Name
ALICE
BOB
CHARLIE
DAVID
EVA
FAY
GEORGE
HANNAH
IVY
JACK

10 rows in set (0.01 sec)

```
mysql> SELECT YEAR(DOB) AS birth_year, COUNT(*) AS num_students  
-> FROM Student GROUP BY birth_year ORDER BY birth_year;
```

birth_year	num_students
1998	1
1999	1
2000	3
2001	2
2002	2
2003	1

6 rows in set (0.01 sec)

```
mysql> SELECT Dept, COUNT(*) AS num_students FROM Student GROUP BY Dept ORDER BY num_students DESC;
```

Dept	num_students
Computer Science	3
Mechanical	3
Electrical	2
Civil	2

```
mysql> SELECT * FROM department LIMIT 10;
```

dept_id	dept_name	manager_name	location	budget	founded_year
1	Computer Science	Dr. Rajesh Kumar	Chennai	150000.00	1995
2	Electrical Engineering	Prof. Priya Sharma	Mumbai	120000.50	2001
3	Mechanical Engineering	Mr. Arvind Patel	Delhi	135000.75	1998
4	Civil Engineering	Ms. Swati Verma	Kolkata	110000.25	2005

4 rows in set (0.00 sec)

```
mysql> SELECT s.reg_no, s.name, s.dob, s.mark1, s.mark2, s.mark3, d.dept_name, d.manager_name  
-> FROM student s  
-> INNER JOIN department d ON s.dept = d.dept_name;
```

reg_no	name	dob	mark1	mark2	mark3	dept_name	manager_name
101	Alice	20000515	85	90	88	Computer Science	Dr. Rajesh Kumar
105	Eve	20010301	88	92	85	Computer Science	Dr. Rajesh Kumar
109	Ivy	20001010	95	93	97	Computer Science	Dr. Rajesh Kumar

3 rows in set (0.00 sec)

```
mysql> SELECT s.reg_no, s.name, s.dob, s.mark1, s.mark2, s.mark3, d.dept_name, d.manager_name AS hod  
-> FROM student s  
-> INNER JOIN department d ON s.dept = d.dept_name;
```

reg_no	name	dob	mark1	mark2	mark3	dept_name	hod
101	Alice	20000515	85	90	88	Computer Science	Dr. Rajesh Kumar
105	Eve	20010301	88	92	85	Computer Science	Dr. Rajesh Kumar
109	Ivy	20001010	95	93	97	Computer Science	Dr. Rajesh Kumar

3 rows in set (0.00 sec)