

# MySQL Operations for Database Management

## 1. Checking the Databases

To view all available databases:

```
sql
CopyEdit
show databases;
```

## 2. Using a Specific Database

To switch to a particular database, use:

```
sql
CopyEdit
use <database_name>;
```

Example:

```
sql
CopyEdit
use ess;
```

## 3. Creating a Table

To create a new table:

```
sql
CopyEdit
create table <table_name> (
    <column_name1> <data_type>,
    <column_name2> <data_type>,
    ...
);
```

Example:

```
sql
CopyEdit
create table students (id int primary key, name text, marks int);
```

## 4. Inserting Data into Tables

To insert values into a table:

```
sql
CopyEdit
insert into <table_name> values (<value1>, <value2>, ...);
```

Example:

```
sql
CopyEdit
insert into students1 values (101, "sahil", 99);
```

## 5. Selecting Data

To retrieve all records from a table:

```
sql
CopyEdit
select * from <table_name>;
```

To retrieve specific columns:

```
sql
CopyEdit
select <column_name1>, <column_name2> from <table_name>;
```

Example:

```
sql
CopyEdit
select name, marks from students;
```

## 6. Filtering Data with Conditions

- **Using WHERE:** To filter rows based on a condition.

```
sql
CopyEdit
select * from students where id = 101;
```

- **Using IN:** To filter rows for multiple values.

```
sql
CopyEdit
select * from students where id in (101, 104, 105);
```

- **Using BETWEEN:** To filter data within a range.

```
sql
CopyEdit
select * from students where id between 101 and 104;
```

- **Using <> or !=:** To exclude specific values.

```
sql
CopyEdit
select * from students where id != 101;
```

## 7. Sorting Data

- **Ascending Order:** To sort in increasing order.

```
sql
CopyEdit
select * from students order by marks asc;
```

- **Descending Order:** To sort in decreasing order.

```
sql
CopyEdit
select * from students order by marks desc;
```

## 8. Modifying a Table

- **Adding a Column:** To add a new column to a table.

```
sql
CopyEdit
alter table students add contact text;
```

- **Changing a Column's Data Type:** To modify an existing column.

```
sql
CopyEdit
alter table students modify column contact char(10);
```

- **Renaming a Column:** To rename a column.

```
sql
CopyEdit
alter table students rename column contact to phone_no;
```

- **Dropping a Column:** To delete an existing column.

```
sql
CopyEdit
alter table students drop column phone_no;
```

## 9. Viewing Table Structure

To view the structure of a table:

```
sql
CopyEdit
desc students;
```

## 10. Handling Duplicate Entries

If a primary key violation occurs due to duplicate entries, the system will throw an error like:

```
sql
CopyEdit
ERROR 1062 (23000): Duplicate entry '101' for key 'students.PRIMARY'
```

## 11. Final Example (Complete Workflow)

### 1. Create tables:

```
sql
CopyEdit
create table students (id int primary key, name text, marks int);
create table students1 (id int, name text, marks int);
```

### 2. Insert records:

```
sql
CopyEdit
insert into students1 values (101, "sahil", 99);
```

### 3. Select data:

```
sql
CopyEdit
select * from students1;
```

### 4. Sort data:

```
sql
CopyEdit
select * from students order by marks desc;
```

### 5. Modify table:

```
sql
CopyEdit
alter table students add contact text;
alter table students modify column contact char(10);
alter table students rename column contact to phone_no;
```

### 6. Drop column:

```
sql
CopyEdit
alter table students drop column phone_no;
```