

# **mySQL Part 1 Assignment solutions**

## **Assignment 2 )**

mysql> use library;

Database changed

mysql> create table customer ( cid int primary key,cname varchar(50),cemail varchar(50));

Query OK, 0 rows affected (0.91 sec)

mysql> create table books (bid int primary key,bname varchar(50) unique,bauthor varchar(50),bprice int not null,cid int,foreign key (cid) references customer(cid));

Query OK, 0 rows affected (0.81 sec)

mysql> create table store (sid int primary key,bid int ,noOfcopies int);

Query OK, 0 rows affected (0.34 sec)

mysql> drop table store;

Query OK, 0 rows affected (0.31 sec)

mysql> create table store (sid int primary key,bid int,noOfcopies int,foreign key (bid) references books(bid));

Query OK, 0 rows affected (1.60 sec)

mysql> desc customers;

ERROR 1146 (42S02): Table 'library.customers' doesn't exist

```
mysql> desc customer;
```

Field	Type	Null	Key	Default	Extra
cid	int	NO	PRI	NULL	
cname	varchar(50)	YES		NULL	
cemail	varchar(50)	YES		NULL	

3 rows in set (0.00 sec)

```
mysql> desc books;
```

Field	Type	Null	Key	Default	Extra
bid	int	NO	PRI	NULL	
bname	varchar(50)	YES	UNI	NULL	
bauthor	varchar(50)	YES		NULL	
bprice	int	NO		NULL	
cid	int	YES	MUL	NULL	

5 rows in set (0.00 sec)

```
mysql> desc store;
```

Field	Type	Null	Key	Default	Extra
sid	int	NO	PRI	NULL	
bid	int	YES	MUL	NULL	
noOfcopies	int	YES		NULL	

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

```
MySQL 8.0 Command Line Client
ERROR 1049 (42000): Unknown database 'library'
mysql> use library;
Database changed
mysql> create table customer ( cid int primary key,cname varchar(50),cemail varchar(50));
Query OK, 0 rows affected (0.91 sec)

mysql> create table books (bid int primary key,bname varchar(50) unique,bauthor varchar(50),bprice int not null,cid int,foreign key (cid) references customer(cid));
Query OK, 0 rows affected (0.81 sec)

mysql> create table store (sid int primary key,bid int ,noOfcopies int);
Query OK, 0 rows affected (0.34 sec)

mysql> drop table store;
Query OK, 0 rows affected (0.31 sec)

mysql> create table store (sid int primary key,bid int,noOfcopies int,foreign key (bid) references books(bid));
Query OK, 0 rows affected (1.60 sec)

mysql> desc customers;
ERROR 1146 (42S02): Table 'library.customers' doesn't exist
mysql> desc customer;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| cid   | int  | NO   | PRI | NULL    |       |
| cname | varchar(50) | YES |     | NULL    |       |
| cemail| varchar(50) | YES |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)

mysql> desc books;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| bid   | int  | NO   | PRI | NULL    |       |
| bname | varchar(50) | YES | UNI | NULL    |       |
| bauthor | varchar(50) | YES |     | NULL    |       |
| bprice | int  | NO   |     | NULL    |       |
| cid   | int  | YES  | MUL | NULL    |       |
+-----+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)

mysql> desc store;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| sid   | int  | NO   | PRI | NULL    |       |
| bid   | int  | YES  | MUL | NULL    |       |
| noOfcopies | int  | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)
```

```
MySQL 8.0 Command Line Client
5 rows in set (0.00 sec)

mysql> desc store;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| sid   | int  | NO   | PRI | NULL    |       |
| bid   | int  | YES  | MUL | NULL    |       |
| noOfcopies | int  | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)

mysql>
```

#### Assignment 4 )

```
mysql> create table likebooks ( select * from books);
```

Query OK, 0 rows affected (2.11 sec)

Records: 0 Duplicates: 0 Warnings: 0

```
mysql> show tables;
```

```
+-----+  
| Tables_in_abhidb |  
+-----+  
| best_friends     |  
| bestfriends      |  
| books            |  
| customerdetails  |  
| customers        |  
| dept             |  
| employee         |  
| friends          |  
| likebooks        |  
| orders           |  
| productid        |  
| sales_table      |  
| students         |  
+-----+
```

13 rows in set (0.00 sec)

```
mysql> desc likebooks;
```

Field	Type	Null	Key	Default	Extra
bid	int	NO		NULL	
bname	varchar(50)	YES		NULL	
bauthor	varchar(50)	YES		NULL	
bprice	int	NO		NULL	
cid	int	YES		NULL	

5 rows in set (0.05 sec)

```
mysql> alter table likebooks add bsummery varchar (100);
```

Query OK, 0 rows affected (4.65 sec)

Records: 0 Duplicates: 0 Warnings: 0

```
mysql> desc likebooks;
```

Field	Type	Null	Key	Default	Extra
bid	int	NO		NULL	
bname	varchar(50)	YES		NULL	
bauthor	varchar(50)	YES		NULL	
bprice	int	NO		NULL	
cid	int	YES		NULL	
bsummery	varchar(100)	YES		NULL	

6 rows in set (0.00 sec)

```
mysql> drop table likebooks;
```

```
Query OK, 0 rows affected (0.48 sec)
```

```
mysql> show tables;
```

```
+-----+  
| Tables_in_abhidb |  
+-----+  
| best_friends      |  
| bestfriends       |  
| books             |  
| customerdetails   |  
| customers          |  
| dept              |  
| employee           |  
| friends            |  
| orders             |  
| productid         |  
| sales_table        |  
| students           |  
+-----+
```

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

```
MySQL 8.0 Command Line Client
12 rows in set (0.00 sec)

mysql> create table likebooks ( select * from books);
Query OK, 0 rows affected (2.11 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> show tables;
+-----+
| Tables_in_abhido |
+-----+
| best_friends      |
| bestFriends       |
| books             |
| customerdetails   |
| customers         |
| dept              |
| employee           |
| friends           |
| likebooks         |
| orders            |
| productid         |
| sales_table       |
| students          |
+-----+
13 rows in set (0.00 sec)

mysql> desc likebooks;
+-----+
| Field | Type          | Null | Key | Default | Extra |
+-----+
| bid   | int           | NO   |     | NULL    |       |
| bname | varchar(50)   | YES  |     | NULL    |       |
| bauthor | varchar(50) | YES  |     | NULL    |       |
| bprice | int           | NO   |     | NULL    |       |
| cid   | int           | YES  |     | NULL    |       |
+-----+
5 rows in set (0.05 sec)

mysql> alter table likebooks add bsummary varchar (100);
Query OK, 0 rows affected (4.65 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> desc likebooks;
+-----+
| Field | Type          | Null | Key | Default | Extra |
+-----+
| bid   | int           | NO   |     | NULL    |       |
| bname | varchar(50)   | YES  |     | NULL    |       |
| bauthor | varchar(50) | YES  |     | NULL    |       |
| bprice | int           | NO   |     | NULL    |       |
| cid   | int           | YES  |     | NULL    |       |
| bsummary | varchar(100) | YES  |     | NULL    |       |
+-----+
6 rows in set (0.00 sec)
```

```
MySQL 8.0 Command Line Client
mysql> desc likebooks;
+-----+
| Field | Type          | Null | Key | Default | Extra |
+-----+
| bid   | int           | NO   |     | NULL    |       |
| bname | varchar(50)   | YES  |     | NULL    |       |
| bauthor | varchar(50) | YES  |     | NULL    |       |
| bprice | int           | NO   |     | NULL    |       |
| cid   | int           | YES  |     | NULL    |       |
| bsummary | varchar(100) | YES  |     | NULL    |       |
+-----+
6 rows in set (0.00 sec)

mysql> drop table likebooks;
Query OK, 0 rows affected (0.48 sec)

mysql> show tables;
+-----+
| Tables_in_abhido |
+-----+
| best_friends      |
| bestFriends       |
| books             |
| customerdetails   |
| customers         |
| dept              |
| employee           |
| friends           |
| orders            |
| productid         |
| sales_table       |
| students          |
+-----+
12 rows in set (0.00 sec)

mysql>
```



### Assignment 5 )

```
mysql> create index id_name_index on students (sid,studentName);
```

Query OK, 0 rows affected (1.54 sec)

Records: 0 Duplicates: 0 Warnings: 0

```
mysql> desc students;
```

Field	Type	Null	Key	Default	Extra
sid	int	NO	PRI	NULL	auto_increment
studentName	varchar(15)	YES	MUL	NOT GIVEN	
course	varchar(15)	YES	UNI	NULL	
fee	double(7,2)	YES		NULL	
dob	date	YES		NULL	
gender	char(1)	YES		NULL	
city	varchar(40)	YES		NULL	

7 rows in set (0.01 sec)

```
mysql> show indexes from students;
```

Table	Non_unique	Key_name	Seq_in_index	Column_name	Collation	Cardinality	Sub_part	Packed	Null	Index_type	Comment	Index_comment	Visible	Expression
students	0	PRIMARY	1	sid	A	5			NULL	NULL				
										BTREE	YES	NULL		
students	0	course	1	course	A	5			NULL	NULL	YES			
										BTREE	YES	NULL		

students	1	index_name_fee	1	studentName	A	5	NULL	NULL	YES
BTREE			YES	NULL					

students	1	index_name_fee	2	fee	A	5	NULL	NULL	YES
BTREE			YES	NULL					

students	1	<b>id_name_index</b>	1	sid	A	5	NULL	NULL	
BTREE			YES	NULL					

students	1	<b>id_name_index</b>	2	studentName	A	5	NULL	NULL	YES
BTREE			YES	NULL					

```

+-----+-----+-----+-----+-----+-----+-----+-----+-----+
---+-----+-----+-----+-----+-----+

```

6 rows in set (0.74 sec)

mysql> drop index id\_name\_index from students;

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 'from students' at line 1

mysql> drop index id\_name\_index on students;

Query OK, 0 rows affected (0.16 sec)

Records: 0 Duplicates: 0 Warnings: 0

```
mysql> show indexes from students;
```

Table	Non_unique	Key_name	Seq_in_index	Column_name	Collation	Cardinality	Sub_part	Packed	Null	Index_type	Comment	Index_comment	Visible	Expression
students	0	PRIMARY	1	sid	A	5			NULL	BTREE	YES	NULL		
students	0	course	1	course	A	5			NULL	BTREE	YES	NULL		
students	1	index_name_fee	1	studentName	A	5			NULL	BTREE	YES	NULL		YES
students	1	index_name_fee	2	fee	A	5			NULL	BTREE	YES	NULL		YES

4 rows in set (0.00 sec)



## Assignment 6 )

```
mysql> create user "abhisaived"@"localhost" identified by "abhi@123";
```

Query OK, 0 rows affected (0.76 sec)

```
mysql> show grants for "abhisaived"@"localhost";
```

```
+-----+
| Grants for abhisaived@localhost          |
+-----+
| GRANT USAGE ON *.* TO `abhisaived`@`localhost` |
+-----+
```

1 row in set (0.04 sec)

```
mysql> grant update,select on *.* to "abhisaived"@"localhost";
```

Query OK, 0 rows affected (0.30 sec)

```
mysql> show grants for "abhisaived"@"localhost";
```

```
+-----+
| Grants for abhisaived@localhost          |
+-----+
| GRANT SELECT, UPDATE ON *.* TO `abhisaived`@`localhost` |
+-----+
```

1 row in set (0.00 sec)

```
mysql> revoke select on *.* to "abhisaived"@"localhost";
```

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 'to "abhisaived"@"localhost"' at line 1

```
mysql> revoke select on *.* from "abhisaived"@ "localhost";
```

Query OK, 0 rows affected (0.07 sec)

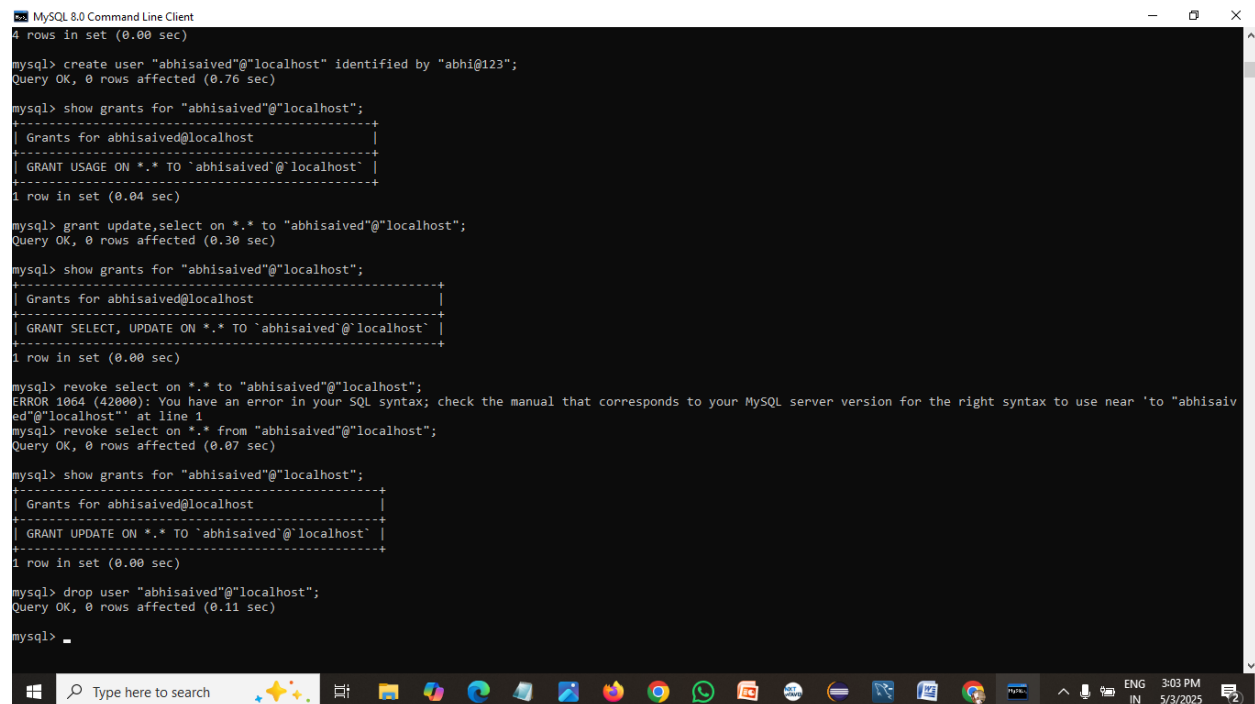
```
mysql> show grants for "abhisaived"@ "localhost";
```

```
+-----+
| Grants for abhisaived@localhost |
+-----+
| GRANT UPDATE ON *.* TO `abhisaived` @`localhost` |
+-----+
```

1 row in set (0.00 sec)

```
mysql> drop user "abhisaived"@ "localhost";
```

Query OK, 0 rows affected (0.11 sec)



```
MySQL 8.0 Command Line Client
4 rows in set (0.00 sec)

mysql> create user "abhisaived"@ "localhost" identified by "abhi@123";
Query OK, 0 rows affected (0.76 sec)

mysql> show grants for "abhisaived"@ "localhost";
+-----+
| Grants for abhisaived@localhost |
+-----+
| GRANT USAGE ON *.* TO `abhisaived` @`localhost` |
+-----+
1 row in set (0.04 sec)

mysql> grant update,select on *.* to "abhisaived"@ "localhost";
Query OK, 0 rows affected (0.30 sec)

mysql> show grants for "abhisaived"@ "localhost";
+-----+
| Grants for abhisaived@localhost |
+-----+
| GRANT SELECT, UPDATE ON *.* TO `abhisaived` @`localhost` |
+-----+
1 row in set (0.00 sec)

mysql> revoke select on *.* to "abhisaived"@ "localhost";
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 'to "abhisaived"@ "localhost"' at line 1
mysql> revoke select on *.* from "abhisaived"@ "localhost";
Query OK, 0 rows affected (0.07 sec)

mysql> show grants for "abhisaived"@ "localhost";
+-----+
| Grants for abhisaived@localhost |
+-----+
| GRANT UPDATE ON *.* TO `abhisaived` @`localhost` |
+-----+
1 row in set (0.00 sec)

mysql> drop user "abhisaived"@ "localhost";
Query OK, 0 rows affected (0.11 sec)

mysql>
```

## Assignment 1 )

```
mysql> show tables;
```

```
+-----+
| Tables_in_library |
+-----+
| books              |
| customer           |
| store              |
+-----+
```

3 rows in set (0.00 sec)

```
mysql> desc books;
```

```
+-----+-----+-----+-----+-----+
| Field | Type   | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+
| bid   | int    | NO   | PRI | NULL    |       |
| bname | varchar(50) | YES | UNI | NULL    |       |
| bauthor | varchar(50) | YES |     | NULL    |       |
| bprice | int     | YES |     | NULL    |       |
| cid   | int     | YES | MUL | NULL    |       |
+-----+-----+-----+-----+-----+
```

5 rows in set (0.00 sec)

```
mysql> deesc customer;
```

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 'deesc customer' at line 1

```
mysql> desc customer;
```

Field	Type	Null	Key	Default	Extra
cid	int	NO	PRI	NULL	
cname	varchar(50)	YES		NULL	
cemail	varchar(50)	YES		NULL	

3 rows in set (0.00 sec)

```
mysql> desc store;
```

Field	Type	Null	Key	Default	Extra
sid	int	NO	PRI	NULL	
bid	int	YES	MUL	NULL	
noOfCopies	int	YES		NULL	

3 rows in set (0.00 sec)



```
MySQL 8.0 Command Line Client

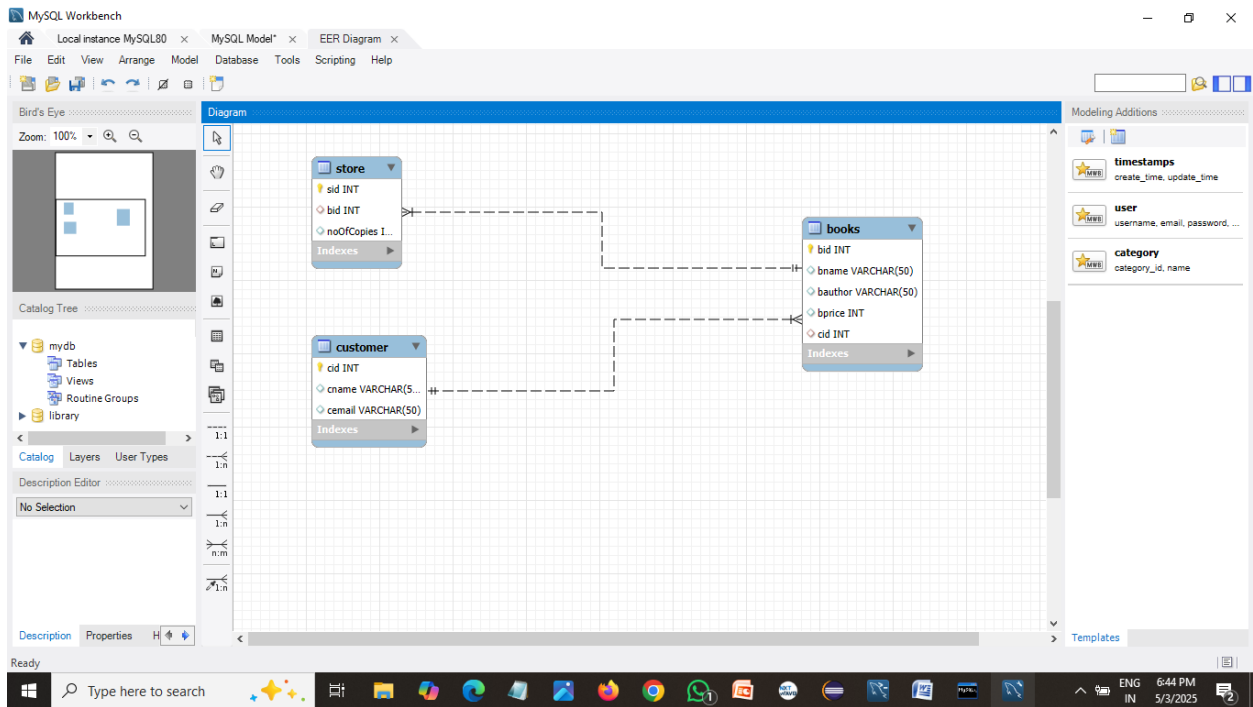
Tables_in_library
+-----+
| books |
| customer |
| store |
+-----+
3 rows in set (0.00 sec)

mysql> desc books;
+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+
| bid   | int  | NO   | PRI | NULL    |       |
| bname | varchar(50) | YES | UNI | NULL    |       |
| bauthor | varchar(50) | YES |     | NULL    |       |
| bprice | int  | YES |     | NULL    |       |
| cid   | int  | YES | MUL | NULL    |       |
+-----+
5 rows in set (0.00 sec)

mysql> desc customer;
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 'deesc customer' at line 1
mysql> desc customer;
+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+
| cid   | int  | NO   | PRI | NULL    |       |
| cname | varchar(50) | YES |     | NULL    |       |
| cemail | varchar(50) | YES |     | NULL    |       |
+-----+
3 rows in set (0.00 sec)

mysql> desc store;
+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+
| sid   | int  | NO   | PRI | NULL    |       |
| bid   | int  | YES | MUL | NULL    |       |
| noOfCopies | int  | YES |     | NULL    |       |
+-----+
3 rows in set (0.00 sec)

mysql>
```



### Assignment 3 )

ACID properties have 4 properties they are:

Atomicity, Consistency, Isolation, and Durability

Atomicity:

All operations in a transaction either complete fully or not at all. If any step fails, the entire transaction is rolled back.

Consistency:

The database moves from one valid state to another. It ensures all integrity constraints (like foreign keys) are preserved and make sure that data is consistent and correct even after transaction.

Isolation:

Concurrent transactions should not interfere with each other. Each and every transaction are independent of each other.

Durability:

Once a transaction is committed, the changes are permanent even under power failures.

---

Demonstration of locking in mySQL

```
mysql> select * from bankdetails;
```

```
+-----+-----+
```

```
| accno | balance |
```

```
+-----+-----+
```

```
| 1 | 1100 |
```

```
| 2 | 700 |
```

```
+-----+-----+
```

2 rows in set (0.00 sec)

```
mysql> start transaction;
```

Query OK, 0 rows affected (0.00 sec)

```
mysql> select * from bankdetails where accno = 1 FOR UPDATE;
```

```
+-----+-----+
```

```
| accno | balance |
```

```
+-----+-----+
```

```
|    1 |   1100 |
```

```
+-----+-----+
```

```
1 row in set (0.00 sec)
```

```
mysql> select * from bankdetails where accno = 2 FOR UPDATE;
```

```
+-----+-----+
```

```
| accno | balance |
```

```
+-----+-----+
```

```
|    2 |    700 |
```

```
+-----+-----+
```

```
1 row in set (0.00 sec)
```

```
mysql> update bankdetails set balance = balance - 200 where accno=1;
```

```
Query OK, 1 row affected (0.00 sec)
```

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

```
mysql> update bankdetails set balance = balance + 200 where accno=2;
```

```
Query OK, 1 row affected (0.00 sec)
```

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

```
mysql> COMMIT;
```

Query OK, 0 rows affected (0.06 sec)

mysql> select \* from bankdetails;

accno	balance
1	900
2	900

2 rows in set (0.00 sec)

```
MySQL 8.0 Command Line Client
+-----+-----+
| accno | balance |
+-----+-----+
| 1     | 1100    |
| 2     | 700     |
+-----+-----+
2 rows in set (0.00 sec)

mysql> start transaction;
Query OK, 0 rows affected (0.00 sec)

mysql> select * from bankdetails where accno = 1 FOR UPDATE;
+-----+-----+
| accno | balance |
+-----+-----+
| 1     | 1100    |
+-----+-----+
1 row in set (0.00 sec)

mysql> select * from bankdetails where accno = 2 FOR UPDATE;
+-----+-----+
| accno | balance |
+-----+-----+
| 2     | 700     |
+-----+-----+
1 row in set (0.00 sec)

mysql> update bankdetails set balance = balance - 200 where accno=1;
Query OK, 1 row affected (0.00 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> update bankdetails set balance = balance + 200 where accno=2;
Query OK, 1 row affected (0.00 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> COMMIT;
Query OK, 0 rows affected (0.06 sec)

mysql> select * from bankdetails;
+-----+-----+
| accno | balance |
+-----+-----+
| 1     | 900     |
| 2     | 900     |
+-----+-----+
```

Isolation levels define how much one transaction is protected from others.

Consider if two people are accessing the same data at the same time. These are the issues that can happen:

Dirty Read : Uncommitted data of other transactions can be seen even before committing it.

Non-repeatable Read : You read the same row twice but get different data

Phantom Read : You run the same query again and get different rows (because of insert)

Isolation Level	Dirty Reads	Non-repeatable Reads	Phantom Reads
Read Uncommitted	Allowed	Allowed	Allowed
Read Committed	Prevented	Allowed	Allowed
Repeatable Read	Prevented	Prevented	Allowed
Serializable	Prevented	Prevented	Prevented

Order of different isolation levels : Read uncommitted < read committed < repeatable read < serializable

Syntax to set isolation level for any transaction:

Set transaction isolation level <read uncommitted or read committed or repeatable read or serializable >

Read uncommitted: One transaction reads data that another transaction hasn't committed yet.

Read Committed: No dirty reads, but non-repeatable reads possible

Repeatable Reads: No dirty/non-repeatable reads, but phantom reads can happen

Serializable: Full isolation, even phantom reads are prevented