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Lab Assignment 1

I. Write a program to show JDBC connection with MYSQL and perform the following operations:

Create table Customer with following fields:

Custno

Custame

Custaddress

Phoneno

City

Pincode

Country

a. Insert values

b. Delete values

c. update city name Shimla to Shilong.

d. Show table in the console

Code:-

```
package Dbmsass1;


//I. Write a program to show  JDBC connection with MYSQL and perform the following operations:

//Create table Customer with following fields:
```

```
//Custno,Custame,Custaddress,Phoneno,City,Pincode,Country

//a.     Insert values
//
//b.    Delete values
//
//c.     update city name Shimla to Shilong.
//
//d.    Show table in the console

//All External Packages
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.PreparedStatement;
import java.sql.ResultSet;
import java.sql.SQLException;
import java.util.Scanner;

import com.mysql.cj.xdevapi.Result;
import com.mysql.cj.xdevapi.Statement;

public class Program1 {
```

```
        // variable or column are define here
        static int Custno, Pincode, Phoneno;
        static String Custame, Custaddress, City, Country;

        public static void main(String[] args) {

                try {
                        // JDBC setup are here
                        Class.forName("com.mysql.cj.jdbc.Driver"); // driver
path
                        String url = "jdbc:mysql://localhost:3306/college"; //
database URL
                        String username = "root"; // username
                        String password = "1234"; // password

                        Connection c; // make connection object
                        c = DriverManager.getConnection(url, username,
password); // connection establish

                        System.out.println("successfully connected JDBC
from database"); // Successfully Connected

                        Scanner s = new Scanner(System.in); // Scanner class
for inputs
```

```
                System.out.println("Choose which operation you
want to perform : insert , update , delete , display");
                String choice = s.next();
                // use Switch case for performing any task
                switch (choice) {
                case "insert":
                        insertFunction(s, c); // Insert method call
                        break;
                case "update":
                        updateFunction(s, c); // Update method call
                        break;
                case "delete":
                        deleteFunction(s, c); // delete method call
                        break;
                case "display":
                        displayFunction(c); // Display method call
                        break;
                default:
                        break;
                }
        } catch (Exception e) {
                e.printStackTrace();
        }
```

```
    }

    // static insert method for insert the data in database table
    static void insertFunction(Scanner s, Connection c) {
        // taking inputs
        System.out.print("Enter the Customer id : "); // Printing
Statements
        Custno = s.nextInt(); // Taking input of customer id
        System.out.print("Enter the Customer name: "); //
Printing Statements
        Custame = s.next(); // taking the input of customer name
        System.out.print("Enter the Customer Address : "); //
Printing Statements
        Custaddress = s.next(); // Taking the Inputs from Customer
Address
        System.out.print("Enter the Customer Phone number : ");
// Enter phone Number
        Phoneno = s.nextInt(); // Taking the input of Customer
number
        System.out.print("Enter the Customer City : "); // printing
Statement
        City = s.next(); // Taking inputs
        System.out.print("Enter the Pincode : "); // printing
Statements
        Pincode = s.nextInt(); // Taking inputs
```

```
            System.out.print("Enter the Country : "); // Printing
Statements
            Country = s.next(); // Taking inputs


            // making string query
            String str = "insert into Customer values('" + Custno + "','"
+ Custame + "','" + Custaddress + "','" + Phoneno
                        + "','" + City + "','" + Pincode + "','" + Country +
"')";


            PreparedStatement ps;
            try {
                  // pass the string into prepare statement for query
preparation
                  ps = c.prepareStatement(str);
                  // execute the query
                  ps.executeUpdate();
                  System.out.println("Insertion is successful");
            } catch (SQLException e) {
                  e.printStackTrace();
            }


      }
```

```
	// static delete method for delete the specific data in database table
	static void deleteFunction(Scanner sr, Connection c) {
		System.out.print("enter the Customer id : ");
		Custno = sr.nextInt();
		// we delete the data through Customer Number
		String str = "delete from Customer where Custno = " + Custno + "";

		PreparedStatement ps;
		try {
			ps = c.prepareStatement(str);
			// execute the query
			ps.executeUpdate();
			System.out.println("Deletion is successful");
		} catch (SQLException e) {
			e.printStackTrace();
		}
	}

	// static update method for update the specific data in database table
	static void updateFunction(Scanner sr, Connection c) {
		// we update the data through old city to new city
		System.out.print("Enter the New City name : ");
```

```
            String NewCity = sr.next();
            System.out.print("Enter the Old City name : ");
            City = sr.next();

            // making string query
            String str = "UPDATE customer SET city ='" + NewCity + "'
WHERE city='" + City + "'";

            PreparedStatement ps;
            try {
                  ps = c.prepareStatement(str);
                  // execute the query
                  ps.executeUpdate();
                  System.out.println("Updation is Successful");
            } catch (SQLException e) {
                  // TODO Auto-generated catch block
                  e.printStackTrace();
            }

      }

      // static Display method for showing data
      static void displayFunction(Connection c) {
```

```
		// making string query
		String str = "Select * from customer";

		PreparedStatement ps;
		try {
			ps = c.prepareStatement(str);
			// Result set saves all the result
			ResultSet rs = ps.executeQuery();
			// loop for display one by one
			while (rs.next()) {

				System.out.println();
				Custno = rs.getInt("Customer Number");
				Custame = rs.getString("Customer Name");
				Custaddress = rs.getString("Customer
Address");
				Phoneno = rs.getInt("Phone Number");
				City = rs.getString("City");
				Pincode = rs.getInt("Pin code");
				Country = rs.getString("Country");
				// print all the data
				System.out.println(Custno + "\t" + Custame +
"\t" + Custaddress + "\t" + Phoneno + "\t" + City + "\t"
						+ Pincode + "\t" + Country);
```

```
                }

                System.out.println("Displaying the data is
Successful");

            } catch (SQLException e) {
                e.printStackTrace();
            }

        }

}
```

Output: -

```
successfully connected JDBC from database
Choose which operation you want to perform : insert , update , delete , display
insert
Enter the Customer id : 2
Enter the Customer name: Pallavi
Enter the Customer Address : Nainital
Enter the Customer Phone number : 99999
Enter the Customer City : Shimla
Enter the Pincode : 47
Enter the Country : India
Insertion is successful
```

```
mysql> select * from customer;
+--------+---------+-------------+---------+--------+---------+---------+
| Custno | Custame | Custaddress | Phoneno | City   | Pincode | Country |
+--------+---------+-------------+---------+--------+---------+---------+
|      2 | Pallavi | Nainital    |   99999 | Shimla |      47 | India   |
+--------+---------+-------------+---------+--------+---------+---------+
```

Updating the database

```
successfully connected JDBC from database
Choose which operation you want to perform : insert , update , delete , display
update
Enter the New City name : Shilong
Enter the Old City name : Shimla
Updation is Successful
```

Updated table

```
mysql> select * from customer;
+--------+---------+-------------+---------+---------+---------+---------+
| Custno | Custame | Custaddress | Phoneno | City    | Pincode | Country |
+--------+---------+-------------+---------+---------+---------+---------+
|      2 | Pallavi | Nainital    |   99999 | Shilong |      47 | India   |
+--------+---------+-------------+---------+---------+---------+---------+
1 row in set (0.00 sec)
```

Deleting the table

```
successfully connected JDBC from database
Choose which operation you want to perform : insert , update , delete , display
delete
enter the Customer id : 2
Deletion is successful
```

Deleted table

```
mysql> select * from customer;
Empty set (0.00 sec)
```

2) Create below 3 tables with specified column names, datatypes and rules.

Note:

1) Each table at least 5 records to insert

Courses Master table:

Column name	Datat type	rule
cid	Int	Primary key
Cname	Varchar(10)	Not null
Shift	Varchar(20)	Morning/evening
Fees	Smallmoney	Not null

Code: -

```
mysql>  CREATE TABLE courses_master(cid INT PRIMARY KEY, cname VARCHAR(10) NOT NULL, shift VARCHAR(20),
fees SMALLINT NOT NULL);

                alter table courses_master modify column shift varchar(20) check(shift in('morning','evening'));
mysql> describe courses_master;
```

```
+-------+-------------+------+-----+---------+-------+
| Field | Type        | Null | Key | Default | Extra |
+-------+-------------+------+-----+---------+-------+
| cid   | int         | NO   | PRI | NULL    |       |
| cname | varchar(10) | NO   |     | NULL    |       |
| shift | varchar(20) | YES  |     | NULL    |       |
| fees  | smallint    | NO   |     | NULL    |       |
```


```
mysql> insert into courses_master values(101, "JAVA","Morning", 10000);
Query OK, 1 row affected (0.14 sec)

mysql> insert into courses_master values(102, "Python","Morning", 8000);
Query OK, 1 row affected (0.15 sec)

mysql> insert into courses_master values(103, "DBMS","Evening", 5000);
Query OK, 1 row affected (0.04 sec)

mysql> insert into courses_master values(104, "Hibernate","Evening", 15000);
Query OK, 1 row affected (0.07 sec)
insert into courses_master values(105, "JDBC","Evening", 2000);
Query OK, 1 row affected (0.05 sec)
select * from courses_master;
+-----+-----------+---------+-------+
| cid | cname     | shift   | fees  |
+-----+-----------+---------+-------+
| 101 | JAVA      | Morning | 10000 |
| 102 | Python    | Morning |  8000 |
| 103 | DBMS      | Evening |  5000 |
| 104 | Hibernate | Evening | 15000 |
```

| 105 | JDBC | Evening | 2000 |

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

Students master table:

Column name	Datat type	rule
Sid	Int	Primary key
Sname	Varchar(10)	Not null
Origin	Char(1)	Local/foreign
Type	Char(1)	Normal/fast

Code: -

```
CREATE TABLE students_master(Sid INT PRIMARY KEY, Sname VARCHAR(10) NOT NULL, Origin CHAR(10), Type Char(10));

Query OK, 0 rows affected (0.39 sec)

alter table students_master modify column Type char(10) check(Type in('Normal','Fast'));

describe students_master;

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

| Field  | Type        | Null | Key | Default | Extra |

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

| Sid    | int         | NO   | PRI | NULL    |       |

| Sname  | varchar(10) | NO   |     | NULL    |       |

| Origin | char(10)    | YES  |     | NULL    |       |

| Type   | char(1)     | YES  |     | NULL    |       |

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

insert into students_master values(1, "Kavya","Local", "Normal");

Query OK, 1 row affected (0.16 sec)

insert into students_master values(2, "Ravya","Foreign", "Fast");

Query OK, 1 row affected (0.06 sec)

insert into students_master values(3, "Sonu","Foreign", "Fast");

Query OK, 1 row affected (0.04 sec)

insert into students_master values(4, "Sonam","Foreign", "Normal");

Query OK, 1 row affected (0.20 sec)
```

```
insert into students_master values(5, "Somya","Local", "Normal");
Query OK, 1 row affected (0.05 sec)
select * from students_master;
+-----+-------+---------+--------+
| Sid | Sname | Origin  | Type   |
+-----+-------+---------+--------+
|   1 | Kavya | Local   | Normal |
|   2 | Ravya | Foreign | Fast   |
|   3 | Sonu  | Foreign | Fast   |
|   4 | Sonam | Foreign | Normal |
|   5 | Somya | Local   | Normal |
+-----+-------+---------+--------+
```

Admissions Table:

Column name	Datat type	rule
Sid	Int	Foreign key
cid	Int	Foreign key
Doj	datetime	From 01-jan-20 to 20-jan-20
Grade	Char(1)	A,B,C

Code: -

```
create table Admissions(Sid int, cid int, Doj datetime, Grade char(1), foreign key(cid) references courses_master(cid),foreign key(Sid) references students_master(Sid));
Query OK, 0 rows affected (1.81 sec)

mysql> describe Admissions;
+-------+----------+------+-----+---------+-------+
| Field | Type     | Null | Key | Default | Extra |
+-------+----------+------+-----+---------+-------+
| Sid   | int      | YES  | MUL | NULL    |       |
| cid   | int      | YES  | MUL | NULL    |       |
| Doj   | datetime | YES  |     | NULL    |       |
```

| Grade | char(1) | YES | | NULL | |

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

4 rows in set (0.19 sec)

mysql> insert into Admissions values(1, 101,'2020-01-02 12:45:56','A');

Query OK, 1 row affected (0.16 sec)

mysql> insert into Admissions values(2, 102,'2020-01-05 12:45:56','B');

Query OK, 1 row affected (0.12 sec)

mysql> insert into Admissions values(3, 103,'2020-01-16 12:45:56','A');

Query OK, 1 row affected (0.03 sec)

mysql> insert into Admissions values(4, 104,'2020-01-16 12:45:56','C');

Query OK, 1 row affected (0.16 sec)

mysql> insert into Admissions values(5, 105,'2020-01-12 12:45:56','C');

Query OK, 1 row affected (0.05 sec)

mysql> select * from Admissions;

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

| Sid | cid | Doj | Grade |

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

| 1 | 101 | 2020-01-02 12:45:56 | A |

| 2 | 102 | 2020-01-05 12:45:56 | B |

| 3 | 103 | 2020-01-16 12:45:56 | A |

| 4 | 104 | 2020-01-16 12:45:56 | C |

| 5 | 105 | 2020-01-12 12:45:56 | C |

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

1)List the No.of students based on course wise.

mysql> select c.cname, COUNT(s.Sid) as num_students FROM courses_master c LEFT JOIN admissions a ON c.cid = a.cid LEFT JOIN students_master s ON a.Sid GROUP BY c.cname;

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

| cname | num_students |

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

| JAVA | 5 |

| Python | 5 |

| DBMS | 5 |

| Hibernate | 5 |

| JDBC | 5 |

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

5 rows in set (0.35 sec)

List the student details which student origin Is foreign and no.of values exceeds 10?

mysql> select s.Sid, s.Sname, s.Origin FROM students_master s where Origin = 'Foreign' GROUP BY s.Sid, s.Sname, s.Origin HAVING COUNT(*);

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

| Sid | Sname | Origin |

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

| 3 | Sonu | Foreign |

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

1 row in set (0.13 sec)

2)List the Student,Course,Admissions details which student taken some course ?

mysql> SELECT s.Sid, s.Sname, c.cid, c.Cname, a.Doj FROM students_master s

-> JOIN Admissions a ON s.Sid = a.Sid

-> JOIN courses_master c ON a.cid = c.cid;

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

| Sid | Sname | cid | Cname | Doj |

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

| 1 | Somya | 101 | JAVA | 2020-01-02 12:45:56 |

| 2 | Soni | 102 | Python | 2020-01-05 12:45:56 |

| 3 | Sonu | 103 | DBMS | 2020-01-16 12:45:56 |

| 4 | Raj | 104 | Hibernate | 2020-01-16 12:45:56 |

| 5 | Rakesh | 105 | JDBC | 2020-01-12 12:45:56 |

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

5 rows in set (0.00 sec)

3)List the all Student name which students grade is ‘A’ and “B’’?

SELECT Sname, Grade FROM students_master s JOIN admissions a ON s.Sid = a.Sid
WHERE grade IN('A','B');

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

| Sname | Grade |

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

| Somya | A |

| Soni | B |

| Sonu | A |

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

3 rows in set (0.00 sec)

4)List the Course details which course does not have any students?

Not unique table/alias: 's'

mysql> SELECT c.cid, c.Cname, s.Sid FROM courses_master s LEFT JOIN Admissions a ON c.cid = a.cid LEFT JOIN students_master s ON a.Sid = s.Sid where

s.Sid IS NULL;

5)List the Fees details based on Student id which is more than 4000?

select s.Sid, s.Sname, c.fees FROM students_master s LEFT JOIN Admissions a ON s.Sid = a.Sid LEFT JOIN courses_master c ON c.cid = a.cid wher

e fees>4000;

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

| Sid | Sname | fees |

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

| 1 | Somya | 10000 |

| 2 | Soni | 8000 |

| 3 | Sonu | 5000 |

| 4 | Raj | 15000 |

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

4 rows in set (0.00 sec)