DATABASE MANAGEMENT SYSTEMS
ASSIGNMENT 2

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JAVA CODE –

```
// command to run
// java -cp .:mysql-connector-java-5.1.23-bin.jar DBMSass2 (UBUNTU)
// java -cp .;mysql-connector-java-5.1.23-bin.jar DBMSass2 (WINDOWS)

import java.sql.*;
import java.util.*;

public class DBMSass2{
   public static void main(String[] args){
      Connection con;
      Statement stmt;
      String url = "jdbc:mysql://10.5.18.68:3306/13CS10049";
      String username = "13CS10049";
      String password = "cse12";

      String query;
      ResultSet rst;
      PreparedStatement dynamicQuery;

      // Connecting to database
      try{
         Class.forName("java.sql.Driver");
         System.out.println("Connection Established");
      }
      catch(java.lang.ClassNotFoundException e){
         System.err.print("ClassNotFoundException: ");
         System.err.println(e.getMessage());
      }

      // Executing static and dynamic queries
      try{
         con = DriverManager.getConnection(url,username,password);
         stmt = con.createStatement();
```

```
// Static Query
System.out.print("\t\nSTATIC QUERY =>");

//First Query
System.out.println("\n\t1) List all the films in which an actor with firstname
                          \"Shahrukh\" and lastname \"Khan\" acted");
System.out.println("Movie Title - ");
query =   "SELECT movie.title \"Movie Title\"\n" +
          "FROM movie\n" +
          "JOIN acts ON acts.mov_id = movie.mov_id\n" +
          "JOIN actor ON actor.act_id = acts.act_id\n" +
          "WHERE actor.first_name='Shahrukh' AND actor.last_name='Khan';";
rst = stmt.executeQuery(query);
while(rst.next())
{
   String movie_name = rst.getString("Movie Title");
   System.out.println(movie_name);
}
rst.close();

//Second Query
System.out.println("\n\t2) List all movies for which \"Shahrukh\" \"Khan\" was an
                           actor as well as director");
System.out.println("Movie Title - ");
query =   "SELECT movie.title \"Movie Title\"\n" +
          "FROM movie\n" +
          "JOIN directs ON movie.mov_id = directs.mov_id\n" +
          "JOIN acts ON acts.mov_id = directs.mov_id\n" +
          "JOIN actor ON actor.act_id = acts.act_id\n" +
          "JOIN director ON directs.dir_id = director.dir_id\n" +
          "WHERE actor.first_name='Shahrukh' AND actor.last_name='Khan' AND\n" +
          "director.first_name = 'Shahrukh' AND director.last_name = 'Khan';";
rst = stmt.executeQuery(query);
while(rst.next())
{
   String movie_name = rst.getString("Movie Title");
   System.out.println(movie_name);
}
rst.close();
```

```
//Third Query
System.out.println("\n\t3) List all \"thrillers\" released after the year 2000 in which
                            \"Shahrukh\" \"Khan\" acted");
System.out.println("Movie Title - ");
query =   "SELECT movie.title \"Movie Title\"\n" +
          "FROM movie\n" +
          "JOIN acts ON acts.mov_id = movie.mov_id\n" +
          "JOIN actor ON actor.act_id = acts.act_id\n" +
          "WHERE actor.first_name='Shahrukh' AND actor.last_name='Khan' AND\n" +
          "movie.year>2000 AND (movie.genre LIKE '%Thriller%');";
rst = stmt.executeQuery(query);
while(rst.next())
{
   String movie_name = rst.getString("Movie Title");
   System.out.println(movie_name);
}
rst.close();

//Fourth Query
System.out.println("\n\t4) List all Co-actors of \"Shahrukh\" \"Khan\" who are
                           younger than him by 10 years");
System.out.println("Co-Actors - ");
query =   "SELECT DISTINCT concat(b.first_name,concat(\" \",b.last_name)) \"Co-
           Actors\"\n" +
          "FROM (actor a,actor b)\n" +
          "JOIN acts c ON a.act_id = c.act_id\n" +
          "JOIN acts d ON c.mov_id = d.mov_id\n" +
          "WHERE b.act_id = d.act_id AND a.first_name='Shahrukh' AND
           a.last_name='Khan'\n" +
          "AND DATEDIFF(b.dob,a.dob)>=3650;";
rst = stmt.executeQuery(query);
while(rst.next())
{
   String co_actors = rst.getString("Co-Actors");
   System.out.println(co_actors);
}
rst.close();
```

```
//Fifth Query
System.out.println("\n\t5) Who is the Director in whose movie \"Shahrukh\" \"Khan\"
                        acted most number of times?");
System.out.println("Director - ");
query =   "SELECT DISTINCT concat(director.first_name,concat(\"
          \",director.last_name)) \"Director\"\n" +
          "FROM actor\n" +
          "JOIN acts ON actor.act_id = acts.act_id\n" +
          "JOIN movie ON acts.mov_id = movie.mov_id\n" +
          "JOIN directs ON directs.mov_id = movie.mov_id\n" +
          "JOIN director ON director.dir_id = directs.dir_id\n" +
          "WHERE actor.first_name ='Shahrukh' AND actor.last_name='Khan'\n" +
          "GROUP BY director.dir_id\n" +
          "ORDER BY count(*) desc limit 1;";
rst = stmt.executeQuery(query);
while(rst.next())
{
   String director = rst.getString("Director");
   System.out.println(director);
}
rst.close();

//closing the statement
stmt.close();



//Dynamic Query
System.out.print("\t\n\nDYNAMIC QUERY =>");
//First Query
System.out.println("\n\t1) List all the films in which an actor with firstname
                        \"Shahrukh\" and lastname \"Khan\" acted");
System.out.println("Movie Title - ");
query =   "SELECT movie.title \"Movie Title\"\n" +
          "FROM movie\n" +
          "JOIN acts ON acts.mov_id = movie.mov_id\n" +
          "JOIN actor ON actor.act_id = acts.act_id\n" +
          "WHERE actor.first_name=? AND actor.last_name=?;";
dynamicQuery = con.prepareStatement(query);
dynamicQuery.setString(1,"Shahrukh");
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dynamicQuery.setString(2,"Khan");
rst = dynamicQuery.executeQuery();
while(rst.next())
{
   String movie_name = rst.getString("Movie Title");
   System.out.println(movie_name);
}
rst.close();

//Second Query
System.out.println("\n\t2) List all movies for which \"Shahrukh\" \"Khan\" was an
                           actor as well as director");
System.out.println("Movie Title - ");
query =   "SELECT movie.title \"Movie Title\"\n" +
          "FROM movie\n" +
          "JOIN directs ON movie.mov_id = directs.mov_id\n" +
          "JOIN acts ON acts.mov_id = directs.mov_id\n" +
          "JOIN actor ON actor.act_id = acts.act_id\n" +
          "JOIN director ON directs.dir_id = director.dir_id\n" +
          "WHERE actor.first_name=? AND actor.last_name=? AND\n" +
          "director.first_name =? AND director.last_name =?;";
dynamicQuery = con.prepareStatement(query);
dynamicQuery.setString(1,"Shahrukh");
dynamicQuery.setString(2,"Khan");
dynamicQuery.setString(3,"Shahrukh");
dynamicQuery.setString(4,"Khan");
rst = dynamicQuery.executeQuery();
while(rst.next())
{
   String movie_name = rst.getString("Movie Title");
   System.out.println(movie_name);
}
rst.close();

//Third Query
System.out.println("\n\t3) List all \"thrillers\" released after the year 2000 in which
                           \"Shahrukh\" \"Khan\" acted");
System.out.println("Movie Title - ");
query =   "SELECT movie.title \"Movie Title\"\n" +
          "FROM movie\n" +
          "JOIN acts ON acts.mov_id = movie.mov_id\n" +
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            "JOIN actor ON actor.act_id = acts.act_id\n" +
            "WHERE actor.first_name=? AND actor.last_name=? AND\n" +
            "movie.year>2000 AND (movie.genre LIKE '%Thriller%');";
dynamicQuery = con.prepareStatement(query);
dynamicQuery.setString(1,"Shahrukh");
dynamicQuery.setString(2,"Khan");
rst = dynamicQuery.executeQuery();
while(rst.next())
{
   String movie_name = rst.getString("Movie Title");
   System.out.println(movie_name);
}
rst.close();

//Fourth Query
System.out.println("\n\t4) List all Co-actors of \"Shahrukh\" \"Khan\" who are
                          younger than him by 10 years");
System.out.println("Co-Actors - ");
query =   "SELECT DISTINCT concat(b.first_name,concat(\" \",b.last_name)) \"Co-
           Actors\"\n" +
          "FROM (actor a,actor b)\n" +
          "JOIN acts c ON a.act_id = c.act_id\n" +
          "JOIN acts d ON c.mov_id = d.mov_id\n" +
          "WHERE b.act_id = d.act_id AND a.first_name=? AND a.last_name=?\n" +
          "AND DATEDIFF(b.dob,a.dob)>=3650;";
dynamicQuery = con.prepareStatement(query);
dynamicQuery.setString(1,"Shahrukh");
dynamicQuery.setString(2,"Khan");
rst = dynamicQuery.executeQuery();
while(rst.next())
{
   String co_actors = rst.getString("Co-Actors");
   System.out.println(co_actors);
}
rst.close();

//Fifth Query
System.out.println("\n\t5) Who is the Director in whose movie \"Shahrukh\" \"Khan\"
                          acted most number of times?");
System.out.println("Director - ");
```

```
        query =   "SELECT DISTINCT concat(director.first_name,concat(\"
                  \",director.last_name)) \"Director\"\n" +
                  "FROM actor\n" +
                  "JOIN acts ON actor.act_id = acts.act_id\n" +
                  "JOIN movie ON acts.mov_id = movie.mov_id\n" +
                  "JOIN directs ON directs.mov_id = movie.mov_id\n" +
                  "JOIN director ON director.dir_id = directs.dir_id\n" +
                  "WHERE actor.first_name =? AND actor.last_name=?\n" +
                  "GROUP BY director.dir_id\n" +
                  "ORDER BY count(*) desc limit 1;";
        dynamicQuery = con.prepareStatement(query);
        dynamicQuery.setString(1,"Shahrukh");
        dynamicQuery.setString(2,"Khan");
        rst = dynamicQuery.executeQuery();
        while(rst.next())
        {
           String director = rst.getString("Director");
           System.out.println(director);
        }
        rst.close();

        // closing the prepared statement
        dynamicQuery.close();
        // closing the connection
        con.close();

      }
      catch (SQLException ex) {
        System.err.println("-----SQLException-----");
        System.err.println("SQLState: " + ex.getSQLState());
        System.err.println("Message: " + ex.getMessage());
        System.err.println("Vendor: " + ex.getErrorCode());
      }
    }
}
```

WRITE UP ON STEPS OF CONNECTING TO DATABASE –

1) Firstly, we will need “mysql-connector-java-5.1.23-bin.jar” JAR file which is also the JDBC Driver which is required to connect to the database 13CS10049.
2) Now, we will have to load the JDBC Driver via the Class.forName() method by giving the driver name in the arguments. Here, I have used “java.sql.Driver” named driver to connect to the database. Exception is also handled if the named driver fails to load.
3) Now, we have to establish a connection to the database. For that purpose, we will use connection object and initializing it by using the “url”,”username” and “password” as specified in the code.
4) Here, the url used is “jdbc:mysql://10.5.18.68:3306/13CS10049” and the username used is “13CS10049” and the password is “cse12”.
5) The connection gets established using the getConnection() method of the DriverManager.
6) Now, we can create statements and prepared statements to execute the queries of the MySql.
7) Libraries used are “ java.sql.* ” and “ java.util.* ”.
8) Make sure that the jar file is in the same location as of the DBMSass2.java file.
9) Commands to run are as follows :-
   javac DBMSass2.java
   java -cp .;mysql-connector-java-5.1.23-bin.jar DBMSass2 (Windows)
   java -cp .:mysql-connector-java-5.1.23-bin.jar DBMSass2 (UBUNTU)