JAVA AWT BASED- TECHIE QUIZ DATABASE MANAGEMENT SYSTEM FORM- SQL CONNECTIVITY USING JDBC

A
Report

Submitted in partial fulfilment of the

Requirements for the award of the Degree of

BACHELOR OF ENGINEERING

IN

INFORMATION TECHNOLOGY

By

B. Mahalaxmi <1602-18-737-080>

Under the Guidance of

B.Leelavathy

Department of Information Technology

Vasavi College of Engineering (Autonomous)

(Affiliated to Osmania University)

Ibrahimbagh, Hyderabad-31

2020

BONAFIDE CERTIFICATE

This is to certify that the project report titled “TECHIE QUIZ FOR C AND PYTHON” project work of Mrs.B.Mahalaxmi bearing Roll.no:1602-18-737-080 who carried out this project under my supervision in the IV semester for the academic year 2019-2020.

Signature
external examine

Signature
internal examine

DBMS Assignment 2
Title: Techie Quiz for C and Python

ABSTRACT

This project is about “Techie Quiz”, which can accessed by students by providing their login id and password. New users can sign up giving their name, mail Id , student Id and college name. Each student have an option of attempting either a python quiz or C quiz or even both. Students can also attempt the quiz more than once. Score will be evaluated and displayed. Quiz consists of multiple choice and programming questions. This helps students to improve their programming skills and spontaneity. Since smart phones are used by almost all the students, it is even easy for them to take quiz even without pc.

DBMS Assignment 2
Title: Techie Quiz for C and Python

INTRODUCTION

A) REQUIREMENTS FOR TECH QUIZ DATABASE MANAGEMENT SYSTEM

List of Tables

1. Students
2. Login
3. Quiz
4. Score
5. Students_login
6. Students_quiz
7. Students_score

List of attributes with their domain types:

ENTITY	ATTRIBUTES	DOMAIN
Students	1. STUDENTID 2. SNAME 3. MAILID 4. COLLEGE	VARCHAR2(10) VARCHAR2(10) VARCHAR2(20) VARCHAR2(10)
Login	1. LOGINID 2. USER_PASSWORD 3. TYPE	VARCHAR2(10) VARCHAR2(15) VARCHAR2(5)
Quiz	1. QUIZID 2. QUIZLANG 3. QNAME	VARCHAR2(20) VARCHAR2(10) VARCHAR2(10)
Score	1. SCRID 2. MARKS	VARCHAR2(10) NUMBER(2)
Students_quiz	1. STUDENTID 2. QUIZID 3. NOOFATTEMPTS	VARCHAR2(10) VARCHAR2(10) NUMBER(2)
Students_login	1. STUDENTID 2. LOGINID	VARCHAR2(10) VARCHAR2(10)
Students_score	1. STUDENTID	VARCHAR2(10)

	2. SCRID	VARCHAR2(10)

B) AIM OF THE PROJECT

To create a Java GUI based form for the project **Tech Quiz Database Management System** which takes the values like : student Id,student name, Mail ID, College,login ID, password from the student. These are the values to be updated in the database using JDBC connectivity .The values entered (insertion, deletion, updation) by the user for the respective table in **GUI** should be updated in the database using **JDBC**.

C) ARCHITECTURE AND TECHNOLOGY USED

Java Eclipse, Oracle 11g Database, Java SE version 7, SQL*Plus.

SQL PLUS is the most basic Oracle Database utility with a basic command-line interface, commonly used by users,administrators and programmers.

The interface of SQL Plus is used for creating the database. DDL and DML commands are implemented for operations being executed. The details of students, their logins, quiz, score are stored in the form of tables in the database.

Eclipse is an integrated development environment(IDE) used in computer programming. It contains a base workspace and an extensible plug-in system for customizing the environment. Eclipse is written mostly in java and its primary use is for developing java applicatons, but it may also be used to develop applications in other programming languages via plug-ins, including Erlang, Javascripts etc.

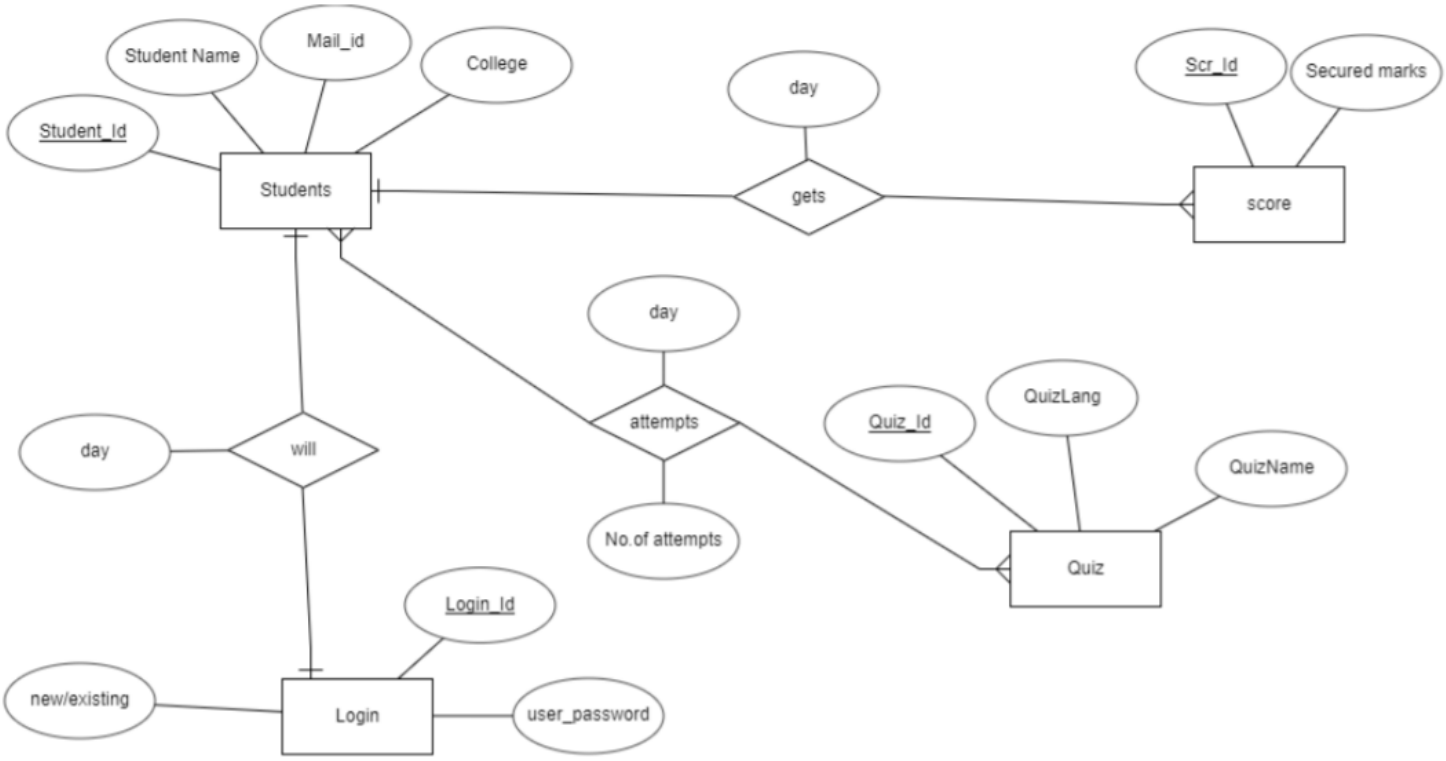
The front end application code is written in **“Java”** using eclipse. The portal for front end application is designed through Eclipse, runs and has the capacity to connect with the database which has data inserted using SQL.

Java AWT (Abstract Window Toolkit) is an API to develop GUI or window based applications in java.

Java AWT components are platform-dependent i.e. components are displayed according to the view of operating system. AWT is heavyweight i.e. its components are using the resources of OS.

The java.awt package provides classes for AWT API such as TextField, Label, TextArea, RadioButton, CheckBox, Choice, List etc.

D) ER Diagram



Java-SQL Connectivity using JDBC

Java Database Connectivity (JDBC) is an application programming interface (API) for the programming language Java, which defines how a client may access a database. It is a Java-based data access technology used for Java database connectivity. It is part of the Java Standard Edition platform, from Oracle Corporation. It provides methods to query and update data in a database and is oriented towards relational databases.

JDBC Connectivity

```
private void connToDb(){
try {

Class.forName(“oracle.jdbc.driver.OracleDriver”);
connection =
DriverManager.getConnection("jdbc:oracle:thin:@localhost:1522:xe","rachana","vasavi
");
statement = connection.createStatement();
} catch (SQLException connectException) {
System.out.println(connectException.getMessage());
System.out.println(connectException.getSQLState());
System.out.println(connectException.getErrorCode());
System.exit(1);
}
catch (Exception e)
{
System.err.println("Unable to find and load driver");
System.exit(1);
}
}
```

Thus, the connection from Java to Oracle database is performed and therefore, can be used for updating tables in the database directly.

E) IMPLEMENTATION

Below is the code for the table Students

Insert Student

```
import java.awt.*;
import java.awt.event.*;
import java.sql.*;
public class InsertStudent extends Frame
{
        Button insertStudentButton;
        TextField sidText, snameText, mailText, collegeText;
        TextArea errorText;
```

```
	Connection connection;
	Statement statement;
	public InsertStudent()
	{
		try
		{
			Class.forName("oracle.jdbc.driver.OracleDriver");
		}
		catch (Exception e)
		{
			System.err.println("Unable to find and load driver");
			System.exit(1);
		}
		connectToDB();
	}

	public void connectToDB()
  {
		try
		{
		  connection =
DriverManager.getConnection("jdbc:oracle:thin:@localhost:1521:SHARATH","maha","2000");
		  statement = connection.createStatement();

		}
		catch (SQLException connectException)
		{
		  System.out.println(connectException.getMessage());
		  System.out.println(connectException.getSQLState());
		  System.out.println(connectException.getErrorCode());
		  System.exit(1);
		}
  }
	public void buildGUI()
	{
		//Handle Insert Account Button
		insertStudentButton = new Button("Insert Student");
		insertStudentButton.addActionListener(new ActionListener()
		{
			public void actionPerformed(ActionEvent e)
			{
```

```
                                try
                                {
                                  //String query = "INSERT INTO sailors (SID,SNAME, RATING,
AGE) VALUES (2,'Divya',7,20)";
                                  String query= "INSERT INTO students VALUES("+"'" +
sidText.getText() + "','" + snameText.getText() + "','" + mailText.getText() + "','" +
collegeText.getText() + "'" +")";
                                  int i = statement.executeUpdate(query);
                                  errorText.append("\nInserted " + i + " rows successfully");
                                }
                                catch (SQLException insertException)
                                {
                                  displaySQLErrors(insertException);
                                }
                        }
                });


                sidText = new TextField(15);
                snameText = new TextField(15);
                mailText = new TextField(15);
                collegeText = new TextField(15);


                errorText = new TextArea(10, 40);
                errorText.setEditable(false);

                Panel first = new Panel();
                first.setLayout(new GridLayout(4, 2));
                first.add(new Label("Student ID:"));
                first.add(sidText);
                first.add(new Label("Name:"));
                first.add(snameText);
                first.add(new Label("Mail_id:"));
                first.add(mailText);
                first.add(new Label("College:"));
                first.add(collegeText);
                first.setBounds(125,90,200,100);

                Panel second = new Panel(new GridLayout(4, 1));
                second.add(insertStudentButton);
```

```
        second.setBounds(125,220,150,100);

                Panel third = new Panel();
                third.add(errorText);
                third.setBounds(125,320,300,200);

                setLayout(null);

                add(first);
                add(second);
                add(third);

                setTitle("Insert Gets");
                setSize(500, 600);
                setVisible(true);
        }

        private void displaySQLErrors(SQLException e)
        {
                errorText.append("\nSQLException: " + e.getMessage() + "\n");
                errorText.append("SQLState:     " + e.getSQLState() + "\n");
                errorText.append("VendorError:  " + e.getErrorCode() + "\n");
        }
}
```


Insert Student
Student ID:
737-080
Name:
maha
Mail_id:
ıaha@gmail.com
College:
vasavi
Insert Student
Inserted 1 rows successfully

```
SQL> select * from students;

STUDENTID  SNAME      MAILID               COLLEGE
---------- ---------- -------------------- ----------
737-121    Jay        Jay@gmail.com        vasavi
737-122    hari       hari@gmail.com       vasavi
737-123    sharath    sharath@gmail.com    vasavi
737-125    arjun      arjun@gmail.com      vasavi
737-124    aadhi      aadhi@gmail.com      vasavi

SQL> commit;

Commit complete.

SQL> select * from students;

STUDENTID  SNAME      MAILID               COLLEGE
---------- ---------- -------------------- ----------
737-080    maha       maha@gmail.com       vasavi
737-121    Jay        Jay@gmail.com        vasavi
737-122    hari       hari@gmail.com       vasavi
737-123    sharath    sharath@gmail.com    vasavi
737-125    arjun      arjun@gmail.com      vasavi
737-124    aadhi      aadhi@gmail.com      vasavi

6 rows selected.
```

Update Student

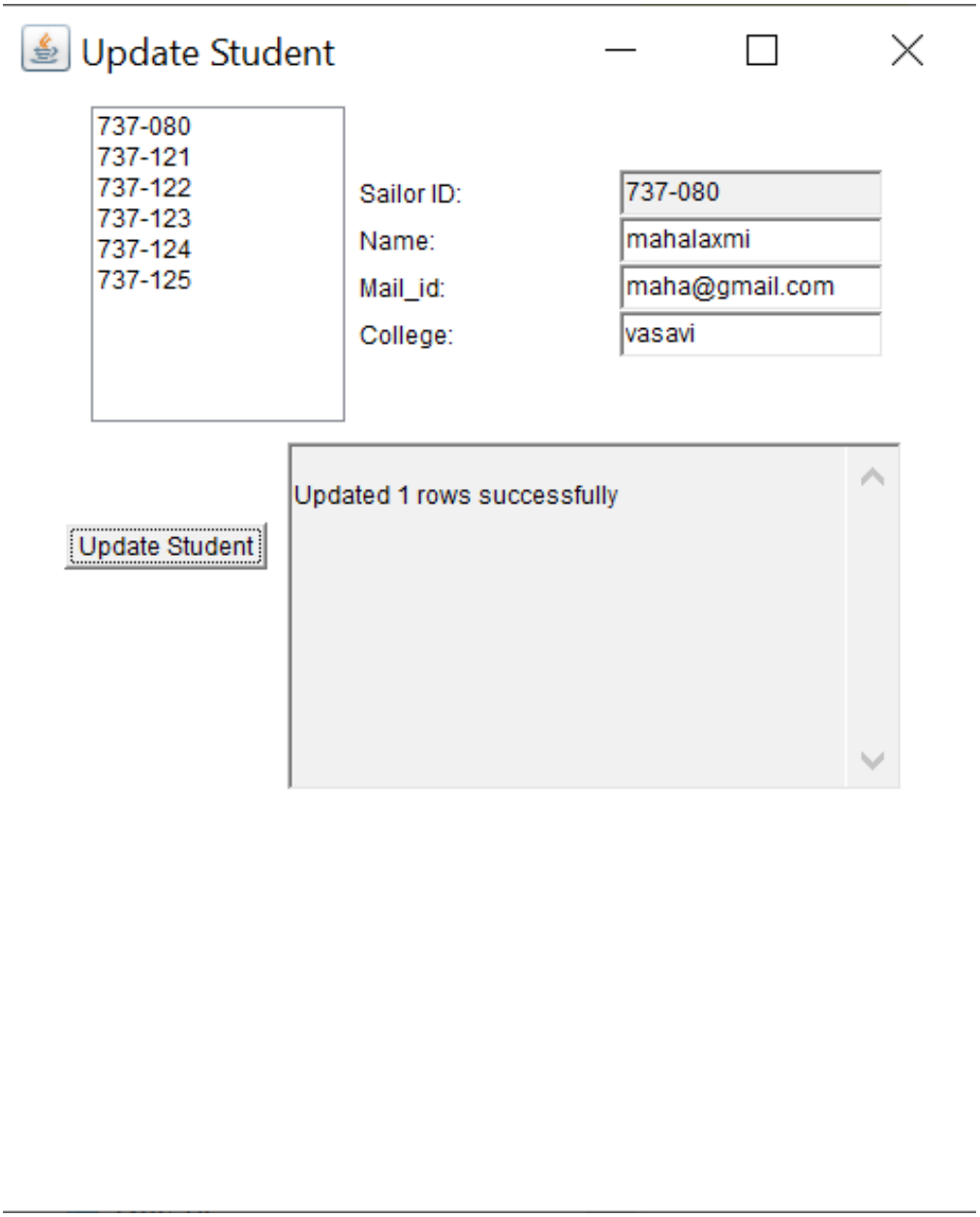
```
import java.awt.*;
import java.awt.event.*;
import java.sql.*;
public class UpdateStudent extends Frame
{
        Button updateStudentButton;
        List studentIDList;
        TextField sidText, snameText, mailText, collegeText;
        TextArea errorText;
        Connection connection;
        Statement statement;
        ResultSet rs;
```

```
	public UpdateStudent()
	{
		try
		{
			Class.forName("oracle.jdbc.driver.OracleDriver");
		}
		catch (Exception e)
		{
			System.err.println("Unable to find and load driver");
			System.exit(1);
		}
		connectToDB();
	}

	public void connectToDB()
  {
		try
		{
		  connection =
DriverManager.getConnection("jdbc:oracle:thin:@localhost:1521:SHARATH","maha","2000");
		  statement = connection.createStatement();

		}
		catch (SQLException connectException)
		{
		  System.out.println(connectException.getMessage());
		  System.out.println(connectException.getSQLState());
		  System.out.println(connectException.getErrorCode());
		  System.exit(1);
		}
  }

	private void loadStudents()
	{
		try
		{
		  rs = statement.executeQuery("SELECT STUDENTID FROM students");
		  while (rs.next())
		  {
			studentIDList.add(rs.getString("STUDENTID"));
```

```
                }
            }
            catch (SQLException e)
            {
              displaySQLErrors(e);
            }
        }

        public void buildGUI()
        {
           studentIDList = new List(10);
                loadStudents();
                add(studentIDList);

                //When a list item is selected populate the text fields
                studentIDList.addItemListener(new ItemListener()
                {
                        public void itemStateChanged(ItemEvent e)
                        {
                                try
                                {
                                        rs = statement.executeQuery("SELECT * FROM students
where STUDENTID ='"+studentIDList.getSelectedItem()+"'");
                                        rs.next();
                                        sidText.setText(rs.getString("STUDENTID"));
                                        snameText.setText(rs.getString("SNAME"));
                                        mailText.setText(rs.getString("MAILID"));
                                        collegeText.setText(rs.getString("COLLEGE"));

                                }
                                catch (SQLException selectException)
                                {
                                        displaySQLErrors(selectException);
                                }
                        }
                });


                //Handle Update Sailor Button
                updateStudentButton = new Button("Update Student");
                updateStudentButton.addActionListener(new ActionListener()
```

```
		{
			public void actionPerformed(ActionEvent e)
			{
				try
				{
					Statement statement = connection.createStatement();
					int i = statement.executeUpdate("UPDATE students "
					+ "SET sname='" + snameText.getText() + "', "
					+ "mailid='" + mailText.getText() + "', "
					+ "college ='"+ collegeText.getText() + "' WHERE studentid
= '"
					+ studentIDList.getSelectedItem()+"'");

					errorText.append("\nUpdated " + i + " rows successfully");
					studentIDList.removeAll();
					loadStudents();
				}
				catch (SQLException insertException)
				{
					displaySQLErrors(insertException);
				}
			}
		});

		sidText = new TextField(15);
		sidText.setEditable(false);
		snameText = new TextField(15);
		mailText = new TextField(15);
		collegeText = new TextField(15);

		errorText = new TextArea(10, 40);
		errorText.setEditable(false);

		Panel first = new Panel();
		first.setLayout(new GridLayout(4, 2));
		first.add(new Label("Sailor ID:"));
		first.add(sidText);
		first.add(new Label("Name:"));
		first.add(snameText);
		first.add(new Label("Mail_id:"));
		first.add(mailText);
```

```
                first.add(new Label("College:"));
                first.add(collegeText);

                Panel second = new Panel(new GridLayout(4, 1));
                second.add(updateStudentButton);

                Panel third = new Panel();
                third.add(errorText);

                add(first);
                add(second);
                add(third);

                setTitle("Update Student");
                setSize(500, 600);
                setLayout(new FlowLayout());
                setVisible(true);

        }
        private void displaySQLErrors(SQLException e)
        {
                errorText.append("\nSQLException: " + e.getMessage() + "\n");
                errorText.append("SQLState:     " + e.getSQLState() + "\n");
                errorText.append("VendorError:  " + e.getErrorCode() + "\n");
        }

        public static void main(String[] args)
        {
                UpdateStudent ups = new UpdateStudent();

                ups.addWindowListener(new WindowAdapter(){
                  public void windowClosing(WindowEvent e)
                  {
                        System.exit(0);
                  }
                });

                ups.buildGUI();
        }
}
```


Update Student
737-080
737-121
737-122
737-123
737-124
737-125
Sailor ID:
737-080
Name:
mahalaxmi
Mail_id:
maha@gmail.com
College:
vasavi
Update Student
Updated 1 rows successfully

```
SQL> select * from students;

STUDENTID  SNAME      MAILID               COLLEGE
---------- ---------- -------------------- ----------
737-080    maha       maha@gmail.com       vasavi
737-121    Jay        Jay@gmail.com        vasavi
737-122    hari       hari@gmail.com       vasavi
737-123    sharath    sharath@gmail.com    vasavi
737-125    arjun      arjun@gmail.com      vasavi
737-124    aadhi      aadhi@gmail.com      vasavi

6 rows selected.

SQL> select * from students;

STUDENTID  SNAME      MAILID               COLLEGE
---------- ---------- -------------------- ----------
737-121    Jay        Jay@gmail.com        vasavi
737-122    hari       hari@gmail.com       vasavi
737-123    sharath    sharath@gmail.com    vasavi
737-125    arjun      arjun@gmail.com      vasavi
737-124    aadhi      aadhi@gmail.com      vasavi
737-080    mahalaxmi  maha@gmail.com       vasavi

6 rows selected.
```

Delete Student

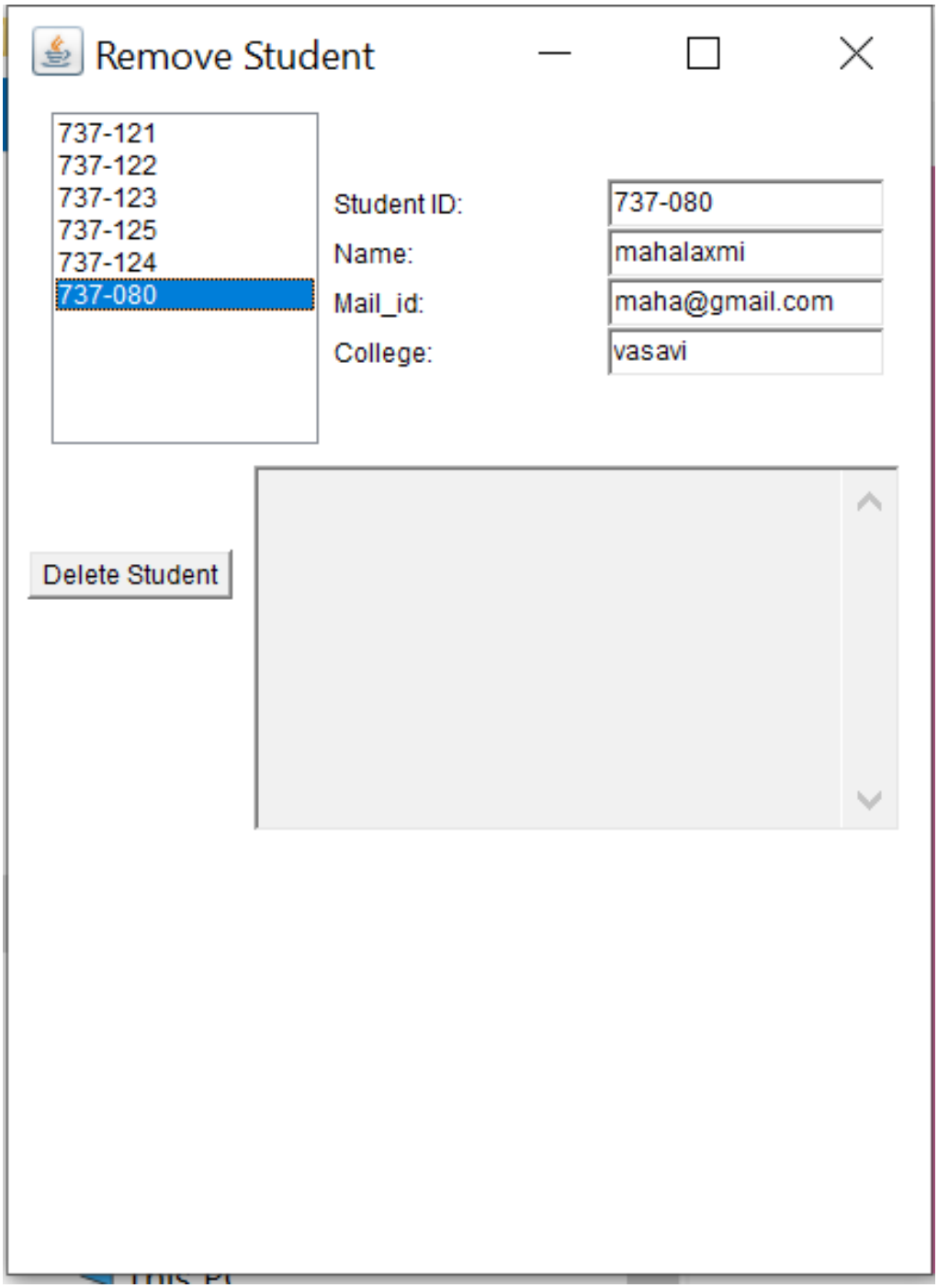
```
import java.awt.*;
import java.awt.event.*;
import java.sql.*;
public class DeleteStudent extends Frame
{

        Button deleteStudentButton;
        List studentIDList;
        TextField sidText, snameText, mailText, collegeText;
        TextArea errorText;
        Connection connection;
        Statement statement;
        ResultSet rs;
```

```
	public DeleteStudent()
	{
		try
		{
			Class.forName("oracle.jdbc.driver.OracleDriver");
		}
		catch (Exception e)
		{
			System.err.println("Unable to find and load driver");
			System.exit(1);
		}
		connectToDB();
	}

	public void connectToDB()
  {
		try
		{
		  connection =
DriverManager.getConnection("jdbc:oracle:thin:@localhost:1521:SHARATH","maha","2000");
		  statement = connection.createStatement();

		}
		catch (SQLException connectException)
		{
		  System.out.println(connectException.getMessage());
		  System.out.println(connectException.getSQLState());
		  System.out.println(connectException.getErrorCode());
		  System.exit(1);
		}
  }

	private void loadStudents()
	{
		try
		{
		  rs = statement.executeQuery("SELECT * FROM Students");
		  while (rs.next())
		  {
			studentIDList.add(rs.getString("STUDENTID"));
		  }
```

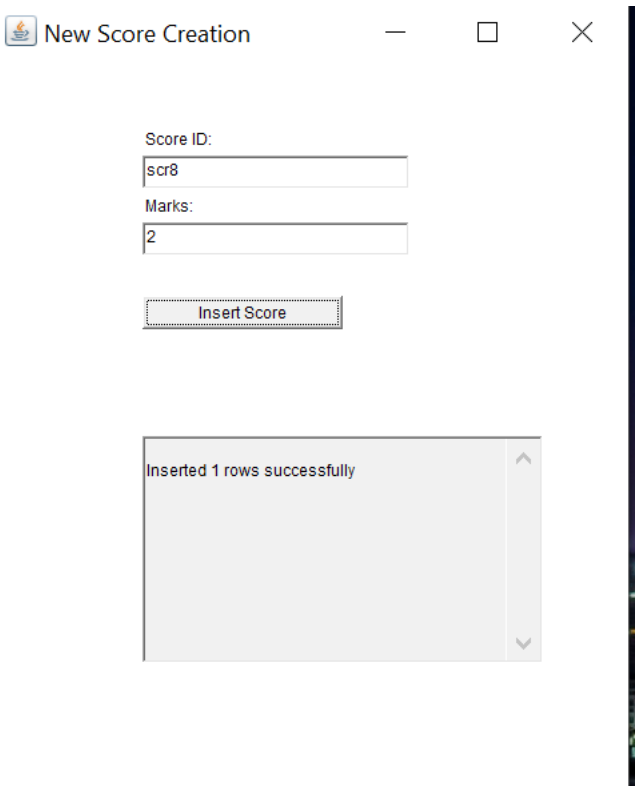
```
                }
                catch (SQLException e)
                {
                  displaySQLErrors(e);
                }
        }

        public void buildGUI()
        {
           studentIDList = new List(10);
                loadStudents();
                add(studentIDList);

                //When a list item is selected populate the text fields
                studentIDList.addItemListener(new ItemListener()
                {
                        public void itemStateChanged(ItemEvent e)
                        {
                                try
                                {
                                        rs = statement.executeQuery("SELECT * FROM students");
                                        while (rs.next())
                                        {
                                                if
(rs.getString("STUDENTID").equals(studentIDList.getSelectedItem()))
                                                break;
                                        }
                                        if (!rs.isAfterLast())
                                        {
                                                sidText.setText(rs.getString("STUDENTID"));
                                                snameText.setText(rs.getString("SNAME"));
                                                mailText.setText(rs.getString("MAILID"));
                                                collegeText.setText(rs.getString("COLLEGE"));
                                        }
                                }
                                catch (SQLException selectException)
                                {
                                        displaySQLErrors(selectException);
                                }
                        }
                });
```

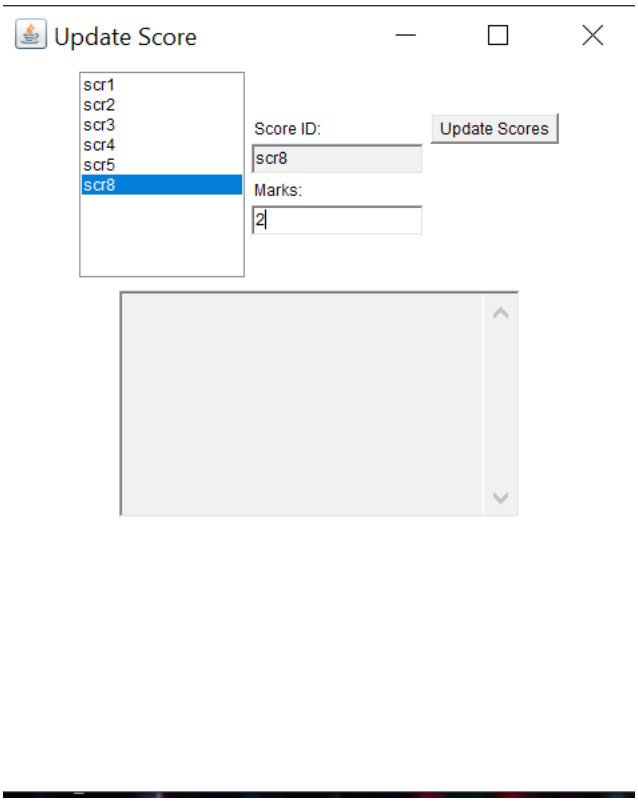
```
		//Handle Delete Sailor Button
		deleteStudentButton = new Button("Delete Student");
		deleteStudentButton.addActionListener(new ActionListener()
		{
			public void actionPerformed(ActionEvent e)
			{
				try
				{
					Statement statement = connection.createStatement();
					int i = statement.executeUpdate("DELETE FROM students
WHERE STUDENTID = '"+studentIDList.getSelectedItem()+"' and
sname='"+snameText.getText()+"' and mailid='"+mailText.getText()+"' and
college='"+collegeText.getText()+"'");
					errorText.append("\nDeleted " + i + " rows successfully");
					sidText.setText(null);
					snameText.setText(null);
					mailText.setText(null);
					collegeText.setText(null);
					studentIDList.removeAll();
					loadStudents();
				}
				catch (SQLException insertException)
				{
					displaySQLErrors(insertException);
				}
			}
		});

		sidText = new TextField(15);
		snameText = new TextField(15);
		mailText = new TextField(15);
		collegeText = new TextField(15);

		errorText = new TextArea(10, 40);
		errorText.setEditable(false);

		Panel first = new Panel();
		first.setLayout(new GridLayout(4, 2));
		first.add(new Label("Student ID:"));
```

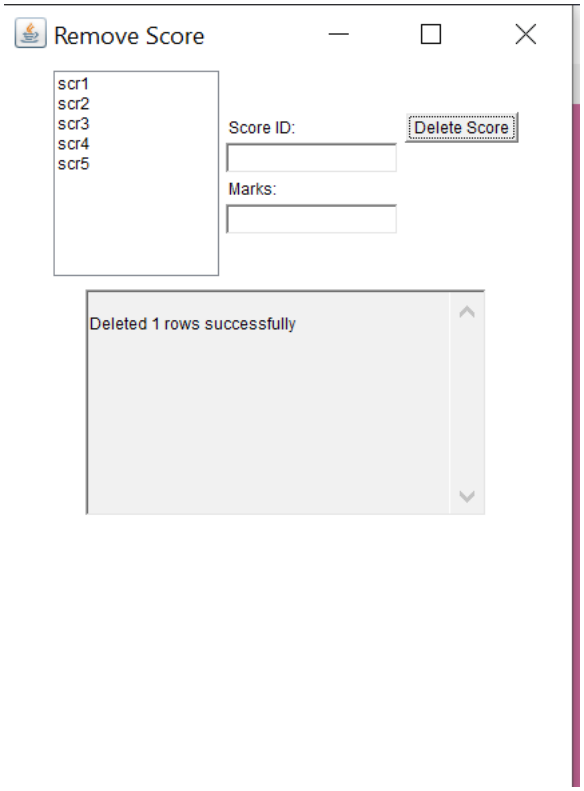
```
                first.add(sidText);
                first.add(new Label("Name:"));
                first.add(snameText);
                first.add(new Label("Mail_id:"));
                first.add(mailText);
                first.add(new Label("College:"));
                first.add(collegeText);

                Panel second = new Panel(new GridLayout(4, 1));
                second.add(deleteStudentButton);

                Panel third = new Panel();
                third.add(errorText);

                add(first);
                add(second);
                add(third);

                setTitle("Remove Student");
                setSize(450, 600);
                setLayout(new FlowLayout());
                setVisible(true);

        }



        private void displaySQLErrors(SQLException e)
        {
                errorText.append("\nSQLException: " + e.getMessage() + "\n");
                errorText.append("SQLState:     " + e.getSQLState() + "\n");
                errorText.append("VendorError:  " + e.getErrorCode() + "\n");
        }

}
```

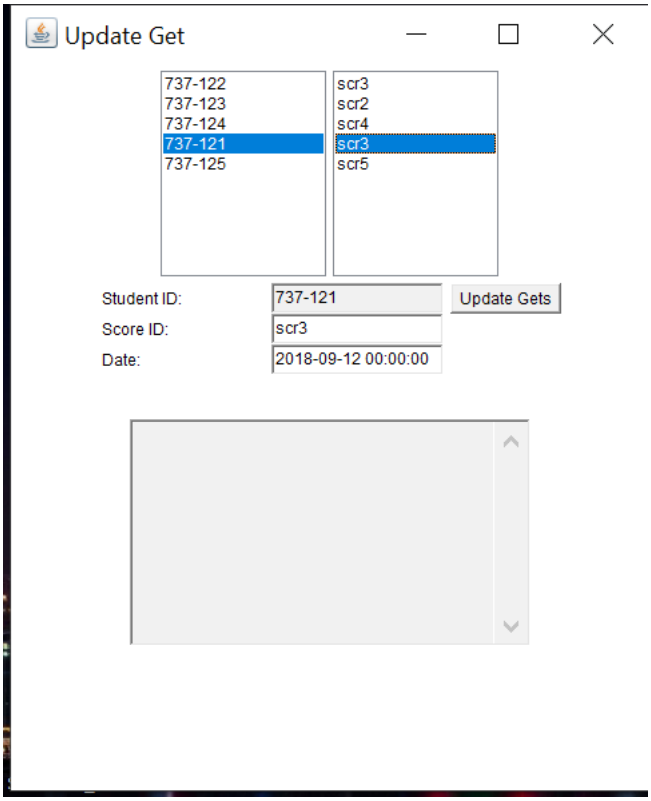

Remove Student
737-121
737-122
737-123
737-125
737-124
737-080
Student ID:
737-080
Name:
mahalaxmi
Mail_id:
maha@gmail.com
College:
vasavi
Delete Student

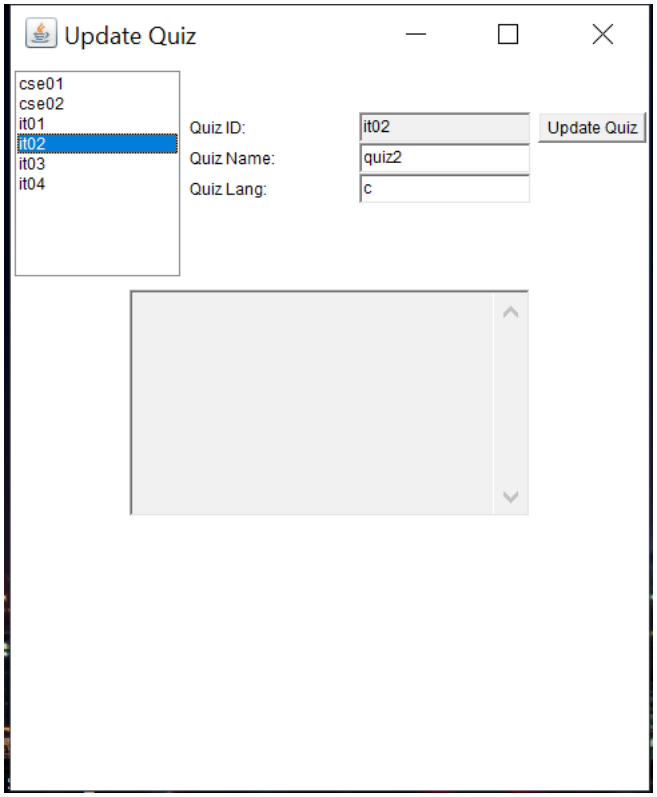
```
SQL> select * from students;

STUDENTID  SNAME      MAILID               COLLEGE
---------- ---------- -------------------- ----------
737-121    Jay        Jay@gmail.com        vasavi
737-122    hari       hari@gmail.com       vasavi
737-123    sharath    sharath@gmail.com    vasavi
737-125    arjun      arjun@gmail.com      vasavi
737-124    aadhi      aadhi@gmail.com      vasavi
737-080    mahalaxmi  maha@gmail.com       vasavi

6 rows selected.

SQL> select * from students;

STUDENTID  SNAME      MAILID               COLLEGE
---------- ---------- -------------------- ----------
737-121    Jay        Jay@gmail.com        vasavi
737-122    hari       hari@gmail.com       vasavi
737-123    sharath    sharath@gmail.com    vasavi
737-125    arjun      arjun@gmail.com      vasavi
737-124    aadhi      aadhi@gmail.com      vasavi
```

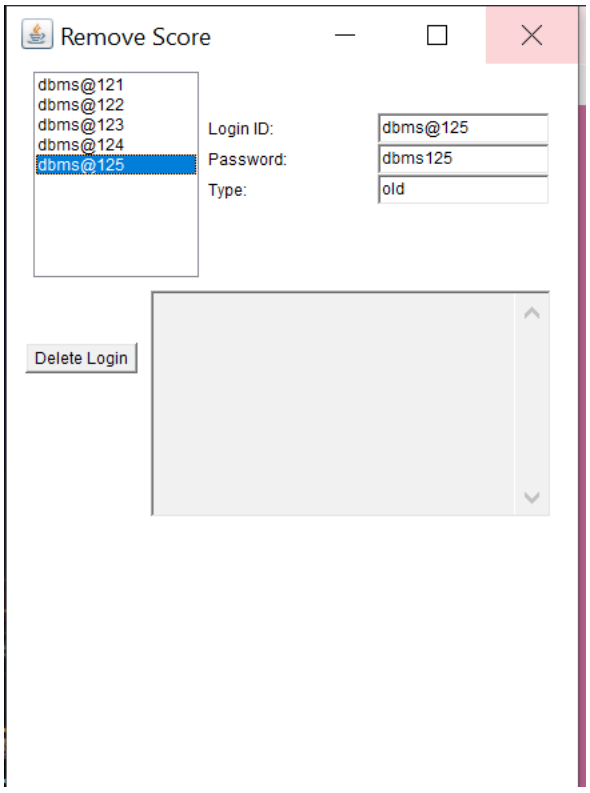

New Score Creation
Score ID:
scr8
Marks:
2
Insert Score
Inserted 1 rows successfully

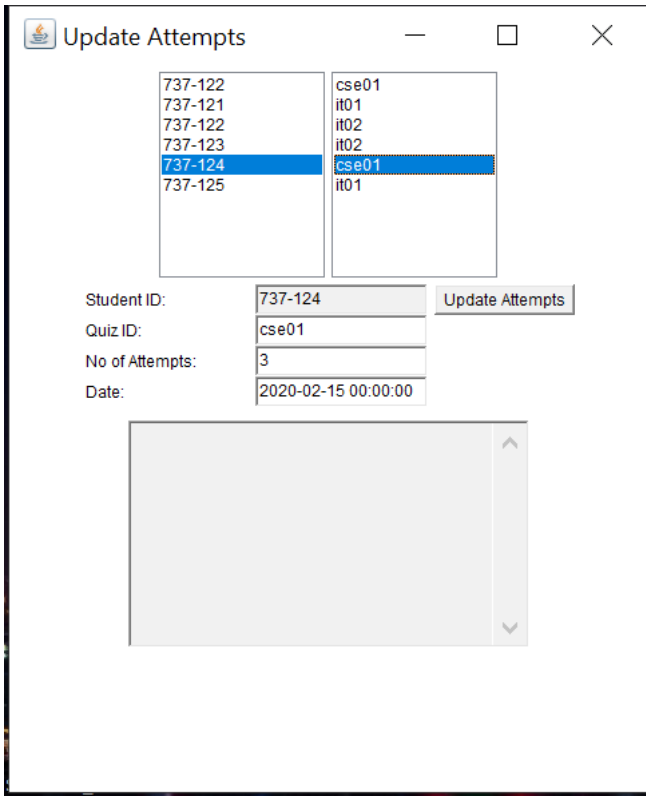

Update Score
scr1
scr2
scr3
scr4
scr5
scr8
Score ID:
scr8
Update Scores
Marks:
2

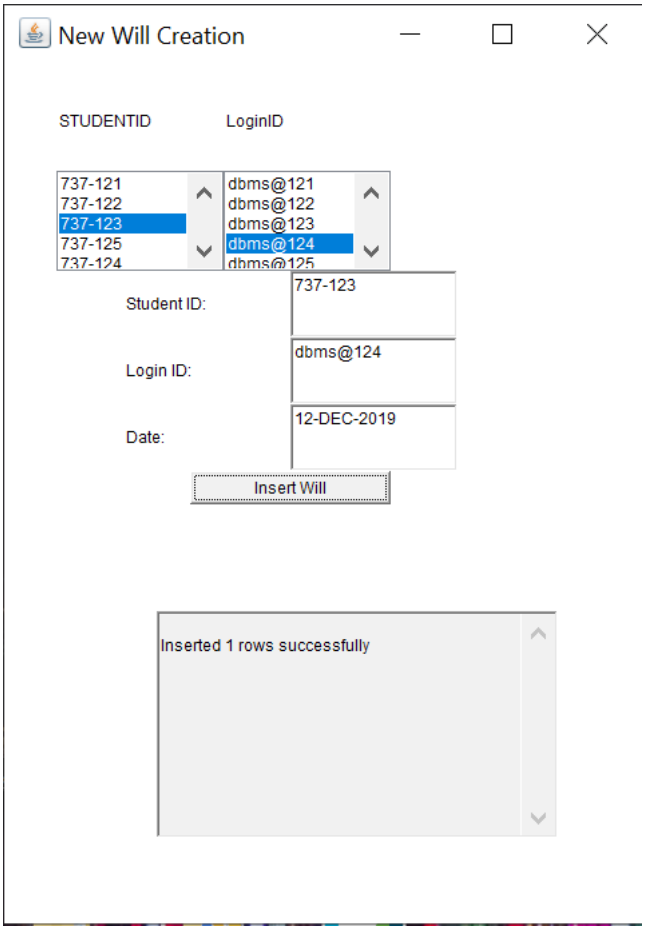

Remove Score
scr1
scr2
scr3
scr4
scr5
Score ID:
Delete Score
Marks:
Deleted 1 rows successfully


Update Get
737-122
737-123
737-124
737-121
737-125
scr3
scr2
scr4
scr3
scr5
Student ID:
737-121
Update Gets
Score ID:
scr3
Date:
2018-09-12 00:00:00


Update Quiz
cse01
cse02
it01
it02
it03
it04
Quiz ID:
it02
Update Quiz
Quiz Name:
quiz2
Quiz Lang:
c


Remove Score
dbms@121
dbms@122
dbms@123
dbms@124
dbms@125
Login ID:
dbms@125
Password:
dbms125
Type:
old
Delete Login


Update Attempts
737-122
737-121
737-122
737-123
737-124
737-125
cse01
it01
it02
it02
cse01
it01
Student ID:
737-124
Update Attempts
Quiz ID:
cse01
No of Attempts:
3
Date:
2020-02-15 00:00:00

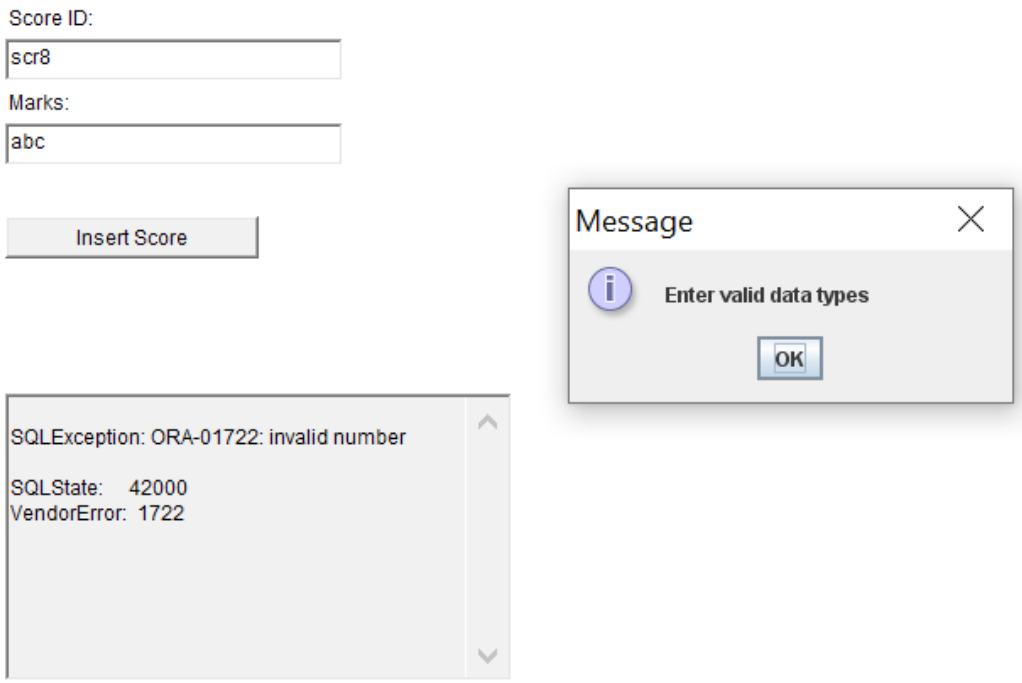

New Will Creation
STUDENTID
LoginID
737-121
737-122
737-123
737-125
dbms@121
dbms@122
dbms@123
dbms@124
Student ID:
737-123
Login ID:
dbms@124
Date:
12-DEC-2019
Insert Will
Inserted 1 rows successfully

F) Testing

The code written for building GUI and connecting with database ensures that the values entered by the user are of correct data types. It prompts an error message if the values entered are not of the specified data types.

Example

In this example the domain of the marks is number , whereas the user entered characters. So it prompted ann error message.



RESULT

1. Connection with database is established
2. The values given for tables in the GUI components by the user are saved in the database.

REFERENCES

https://docs.oracle.com/javase/7/docs/api/
https://www.geeksforgeeks.org/establishing-jdbc-connection-in-java/
https://www.javatpoint.com/java-awt