JAVA AWT BASED- FOREX TRADING DATABASE SYSTEM -SQL CONNECTIVITY USING JDBC

A

Report

Submitted in partial fulfilment of the

BE 1V SEMESTER DATABASE MANAGEMENT SYSTEM

INFORMATION TECHNOLOGY

By

K.HEMA <1602-18-737-071>

Under the guidance of

B.Leelavathy

Department of Information Technology
Vasavi College of Engineering (Autonomous)
(Affiliated to Osmania University)
Ibrahimbagh, Hyderabad-31

BONAFIDE CERTIFICATE

This is to certify that the project report titled "**Forex Trading Database System**" project work of **Mrs.K.Hema** bearing Roll.no:**1602-18-737-071** who carried out this project under the guidance of **B.Leelavathy** during IV semester for the academic year **2019-2020.**

External Examiner	**Internal Examiner**
	B.Leelavathy
	Assistant professor
	Department of Information Technology

DBMS Assignment 2
Title: Forex Trading Database System

ABSTRACT

This is project “**Forex Trading database systems”** is:It is a global decent.The foreign exchange (forex) market is the largest and most sophisticated market in the world for currency exchange. Forex trading takes place not on a centralized exchange as in the case of options, stock or futures, but through a wide variety of fx brokers. Nonetheless, money transfer comparison websites offer the most comprehensive and useful information you can find on the web. They do the legwork for you: they research the trends and the market, they compare exchange rates and brokers and list the best results based on your instructions. With all the information gathered, you only have to choose the best exchange rates.

This project help us to know how forex trading happens using database systems.

K.Hema
1602-18737-071

INTRODUCTION

A)REQUIREMENT ANALYSIS FOR FOREX TRADING DATABASE SYSTEM

<u>List of Tables:</u>

- Login
- Account
- transactions
- trade
- request_transaction
- does_trading
- customers_account

List of attributes with their domain types:

ENTITY	ATTRIBUTES	DOMAIN

Login	Customer id
	user name
	password
	customer name
	contact
	address
		NUMBER(10)
		VARCHAR(15)
		NUMBER(10)
		VARCHAR(15)
		NUMBER(10)
		NUMBER(10)

does_trading	since	NUMBER(10)
Customers_account	since	NUMBER(10)

Transaction	Transaction id
	currency of
		NUMBER(15)
		VARCHAR(15)

Account	Account id
	account type
	balance
	balance type
		NUMBER(15)
		VARCHAR(15)
		NUMBER(20)
		VARCHAR(20)

Trade	Trading id
	adminstrator
	contact
	currency to
	address
		NUMBER(10)
		VARCHAR(20)
		NUMBER(10)
		VARCHAR(15)
		NUMBER(15)

Request_Transaction	date	NUMBER(10)

B)AIM OF THE PROJECT

To create a Java GUI based form for the project Forex Trading Database Management System which takes the values like : Trade ID, contact ID, address,currencyto, administrator from the customer. 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 iis 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.

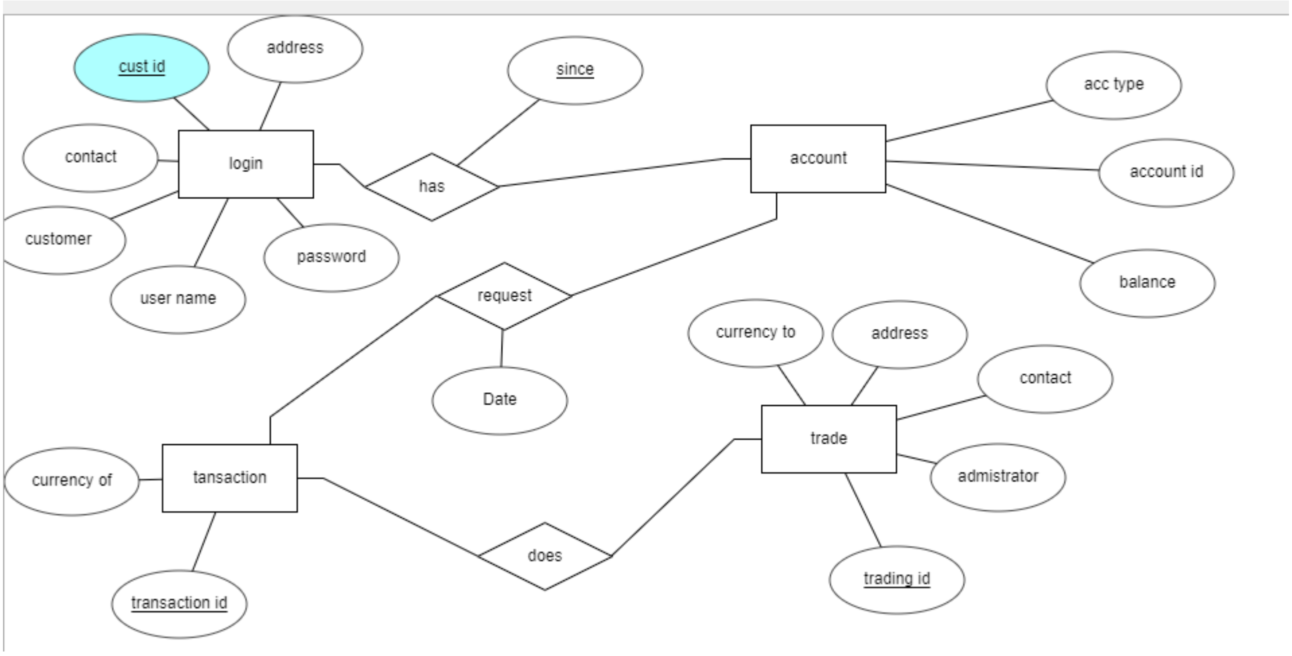
The front end application code is written in “Java” using eclipse. The portal for front end application is designed through Eclipse, runs and has the capacity to connect with the database which has data inserted using SQL.

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","hema","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.

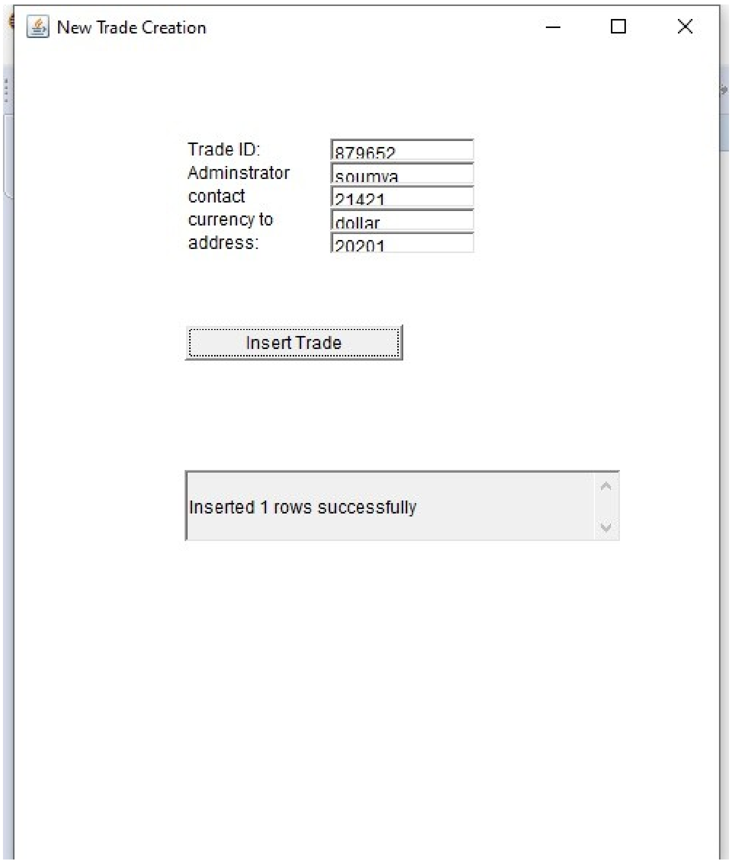
E) IMPLEMENTATION

Below is the code for the table Trade

Insert Trade:

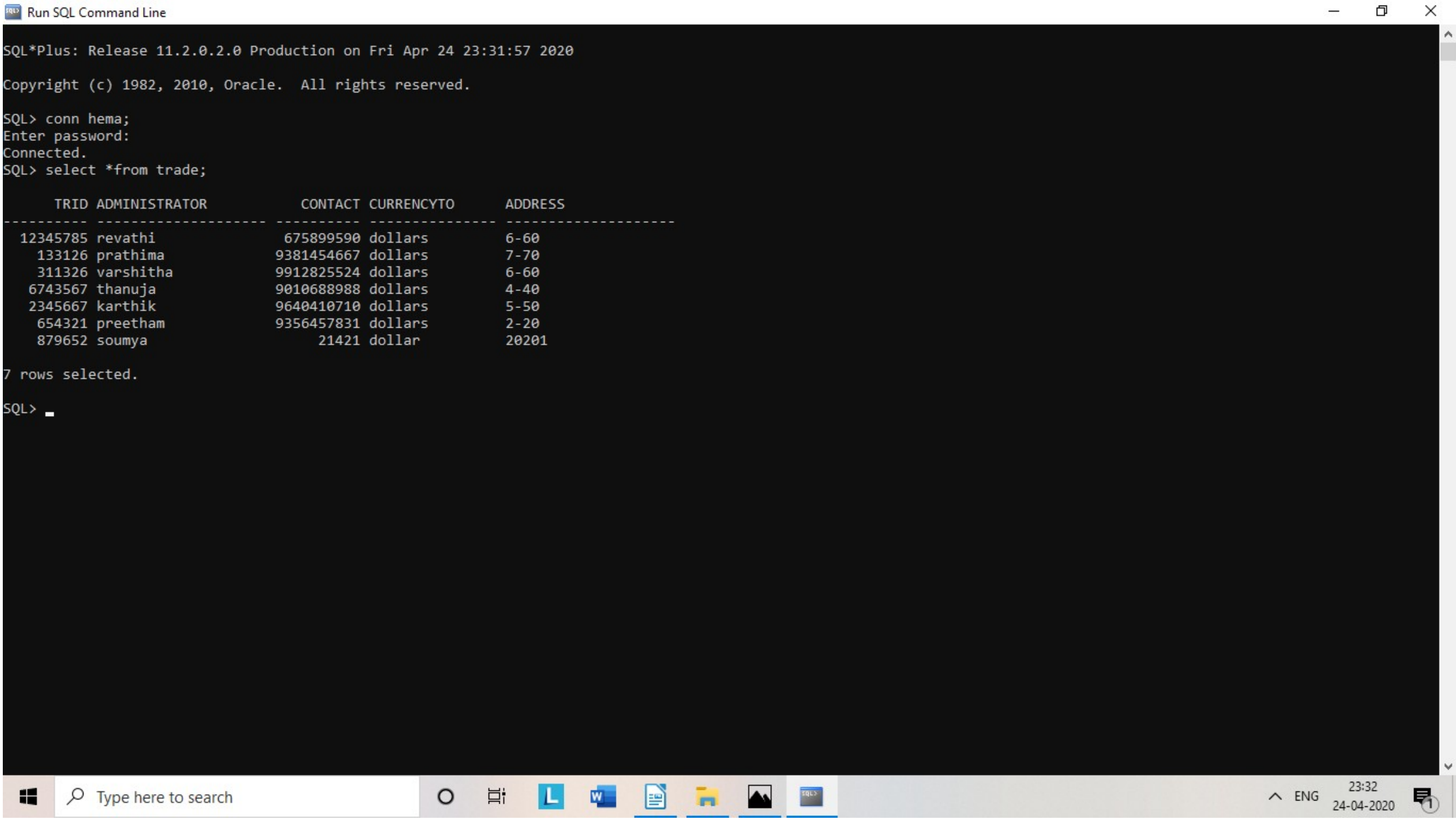
```
import java.awt.*;

import java.awt.event.*

import java.sql.*;
public class InsertTrade extends Frame

{
        Button insertTradeButton;

        TextField tridText, contactText, administratorText, currencytoText,addressText;

        TextArea errorText;

        Connection connection;

        Statement statement;

        public InsertTrade()
        {
                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:xe","hema","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);
                }
```

```
   }
            public void buildGUI()
            {
                        //Handle Insert Account Button
                        insertTradeButton = new Button("Insert Trade");
                        insertTradeButton.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 trade VALUES("+"'" + tridText.getText() +
"','" + administratorText.getText() + "','" + contactText.getText() + "','" + currencytoText.getText() + "','" +
addressText.getText() +  "'" +")";
                                                  int i = statement.executeUpdate(query);
                                                  errorText.append("\nInserted " + i + " rows successfully");
                                                }
                                                catch (SQLException insertException)
                                                {Frame f=new Frame();
OptionPane.showmessagedialog(f,”enter correct values”);
                                                  displaySQLErrors(insertException);
                                                }
                                    }
                        });
                      tridText = new TextField(15);
                        administratorText = new TextField(15);
                        contactText = new TextField(100);


            currencytoText = new TextField(100);
            addressText = new TextField(100);
errorText = new TextArea(10, 40);
                        errorText.setEditable(false);

                        Panel first = new Panel();
                        first.setLayout(new GridLayout(6,3));
                        first.add(new Label("Trade ID:"));
                        first.add(tridText);
                        first.add(new Label("Adminstrator"));
                        first.add(administratorText);
                        first.add(new Label("contact"));
                        first.add(contactText);
                        first.add(new Label("currency to"));
                        first.add(currencytoText);
                        first.add(new Label("address:"));
                        first.add(addressText);
                        first.setBounds(125,90,200,100);

                        Panel second = new Panel(new GridLayout(4,1));
                        second.add(insertTradeButton);
       second.setBounds(125,220,150,100);
            Panel third = new Panel(new GridLayout(4,1))
third.add(errorText);
                        third.setBounds(125,320,300,200);
             setLayout(null);
                        add(second);
                        add(third);

                        setTitle("New Trade Creation");
                        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");
            }
           public static void main(String[] args)
            {
                        InsertTrade itrade = new InsertTrade();

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



Trade ID: 879652
Adminstrator soumya
contact 21421
currency to dollar
address: 20201

Inserted 1 rows successfully



```
SQL*Plus: Release 11.2.0.2.0 Production on Fri Apr 24 23:31:57 2020

Copyright (c) 1982, 2010, Oracle.  All rights reserved.

SQL> conn hema;
Enter password:
Connected.
SQL> select *from trade;

      TRID ADMINISTRATOR           CONTACT CURRENCYTO      ADDRESS
---------- -------------------- ---------- --------------- --------------------
  12345785 revathi               675899590 dollars         6-60
    133126 prathima             9381454667 dollars         7-70
    311326 varshitha            9912825524 dollars         6-60
   6743567 thanuja              9010688988 dollars         4-40
   2345667 karthik              9640410710 dollars         5-50
    654321 preetham             9356457831 dollars         2-20
    879652 soumya                    21421 dollar          20201

7 rows selected.

SQL> _
```

UPDATE TRADE:

```
import java.awt.*;
import java.awt.event.*;
import java.sql.*;
public class UpdateTrade extends Frame
{
        Button updateTradeButton;
        List TradeIDList;
        TextField tridText, administratorText,contactText, currencyToText,addressText;
        TextArea errorText;
        Connection connection;
        Statement statement;
        ResultSet rs;
        public UpdateTrade()
        {
                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
```

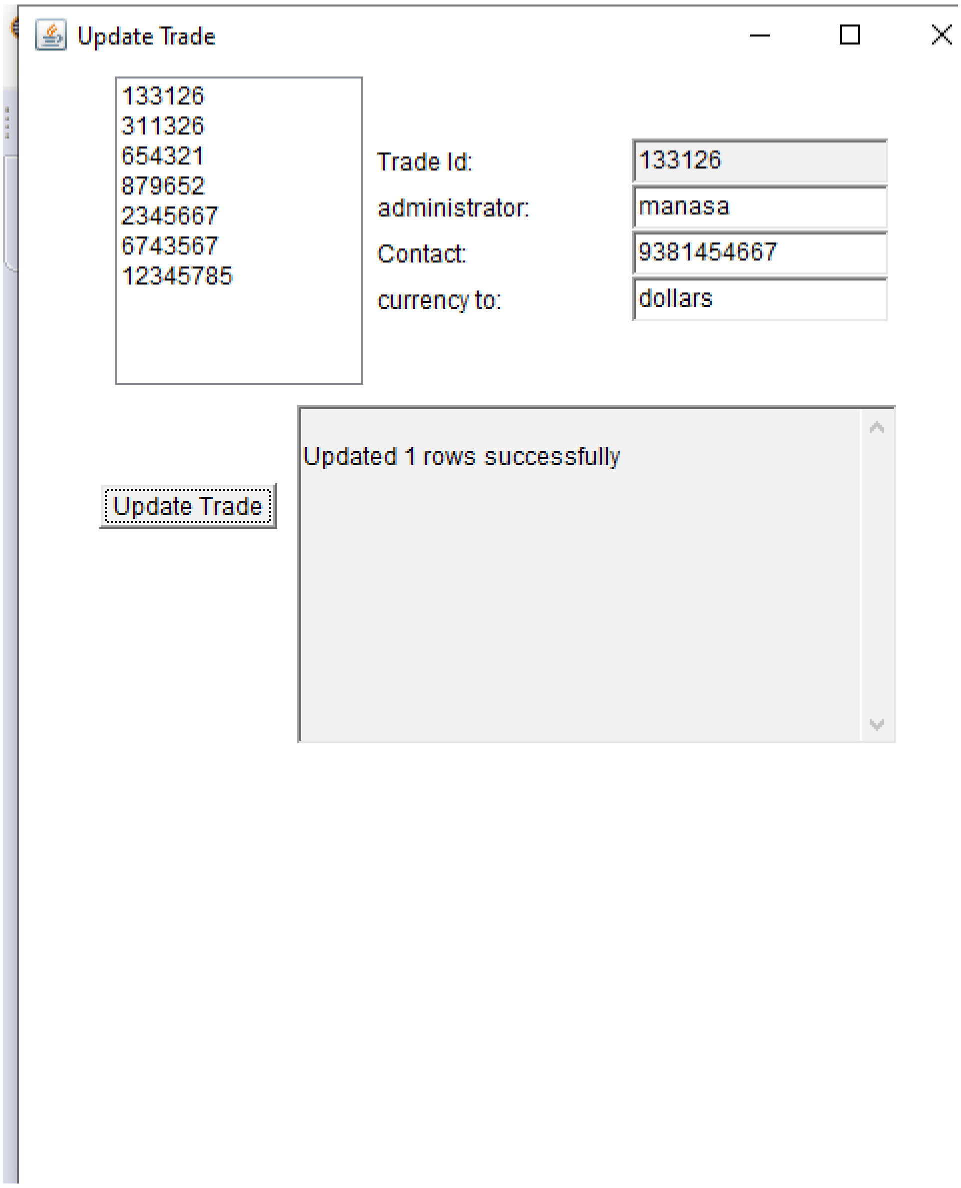
```
                        {
                          connection =
DriverManager.getConnection("jdbc:oracle:thin:@localhost:1521:xe","hema","vasavi");
                          statement = connection.createStatement();


                        }
                        catch (SQLException connectException)
                        {
                          System.out.println(connectException.getMessage());
                          System.out.println(connectException.getSQLState());
                          System.out.println(connectException.getErrorCode());
System.exit(1);
                        }
    }
            private void loadTrade()
            {
                        try
                        {
                          rs = statement.executeQuery("SELECT TRID FROM TRADE");
                          while (rs.next())
                          {
                                    TradeIDList.add(rs.getString("TRID"));
                          }
                        }
                        catch (SQLException e)
                        {
                          displaySQLErrors(e);
                        }
            }


            public void buildGUI()
```

```
        {
          TradeIDList = new List(10);
                loadTrade();
                add(TradeIDList);


                //When a list item is selected populate the text fields
                TradeIDList.addItemListener(new ItemListener()
                {
                        public void itemStateChanged(ItemEvent e)
                        {
                                try{
                                        rs = statement.executeQuery("SELECT * FROM TRADE where TRID
='"+TradeIDList.getSelectedItem()+"'");
                                        rs.next();
                                        tridText.setText(rs.getString("TRID"));
                                        administratorText.setText(rs.getString("ADMINISTRATOR"));
                                        contactText.setText(rs.getString("CONTACT"));
                                        currencyToText.setText(rs.getString("CURRENCYTO"));
                                        addressText.setText(rs.getString("ADDRESS"));




                                }
                                catch (SQLException selectException)
                                {
                                        displaySQLErrors(selectException);
                                }
                        }
                });
        //Handle Update Sailor Button+"'");


        updateTradeButton = new Button("Update Trade");

        updateTradeButton.addActionListener(new ActionListener()

        {

            public void actionPerformed(ActionEvent e)

            {

                try

                {

                {

                    Statement statement = connection.createStatement();

                    int i = statement.executeUpdate("UPDATE TRADE "

                    + "SET administrator='" + administratorText.getText() +"', "

                            + "contact='" + contactText.getText() + "', " +

                     "currencyto ='" + currencyToText.getText() +"',"


                            + "address='" + addressText.getText() +

                            "'where trid='" + TradeIDList.getSelectedItem()+"'");

                                errorText.append("\nUpdated " + i + " rows
successfully");

                    TradeIDList.removeAll();

                    loadTrade();

                }

                catch (SQLException insertException)

                {

                    displaySQLErrors(insertException);

                }

            }

        });

tridText = new TextField(15);
```

```
tridText.setEditable(false);
			administratorText = new TextField(15);
			contactText = new TextField(15);
			{
			currencyToText = new TextField(15);
			addressText = 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("Trade Id:"));


			first.add(tridText);
			first.add(new Label("administrator:"));
			first.add(administratorText);
			first.add(new Label("Contact:"));
			first.add(contactText);
			first.add(new Label("currency to:"));
			first.add(currencyToText);

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

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

			add(first);
			add(second);
```

```
        add(third);


        setTitle("Update Trade");


        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)
    {
        UpdateTrade uTrade = new UpdateTrade();


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


        uTrade.buildGUI();
    }
}
```

{

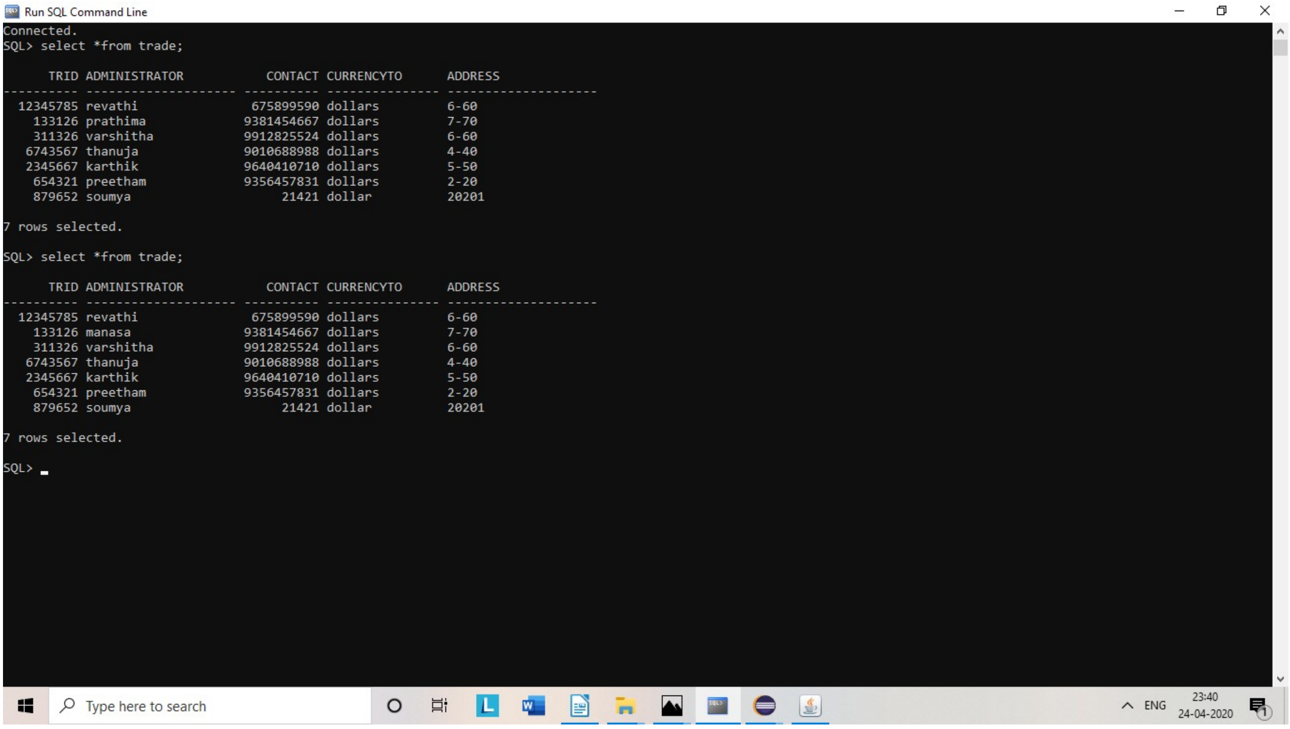


133126
311326
654321
879652
2345667
6743567
12345785

Trade Id:	133126
administrator:	manasa
Contact:	9381454667
currency to:	dollars

```
Updated 1 rows successfully
```

{



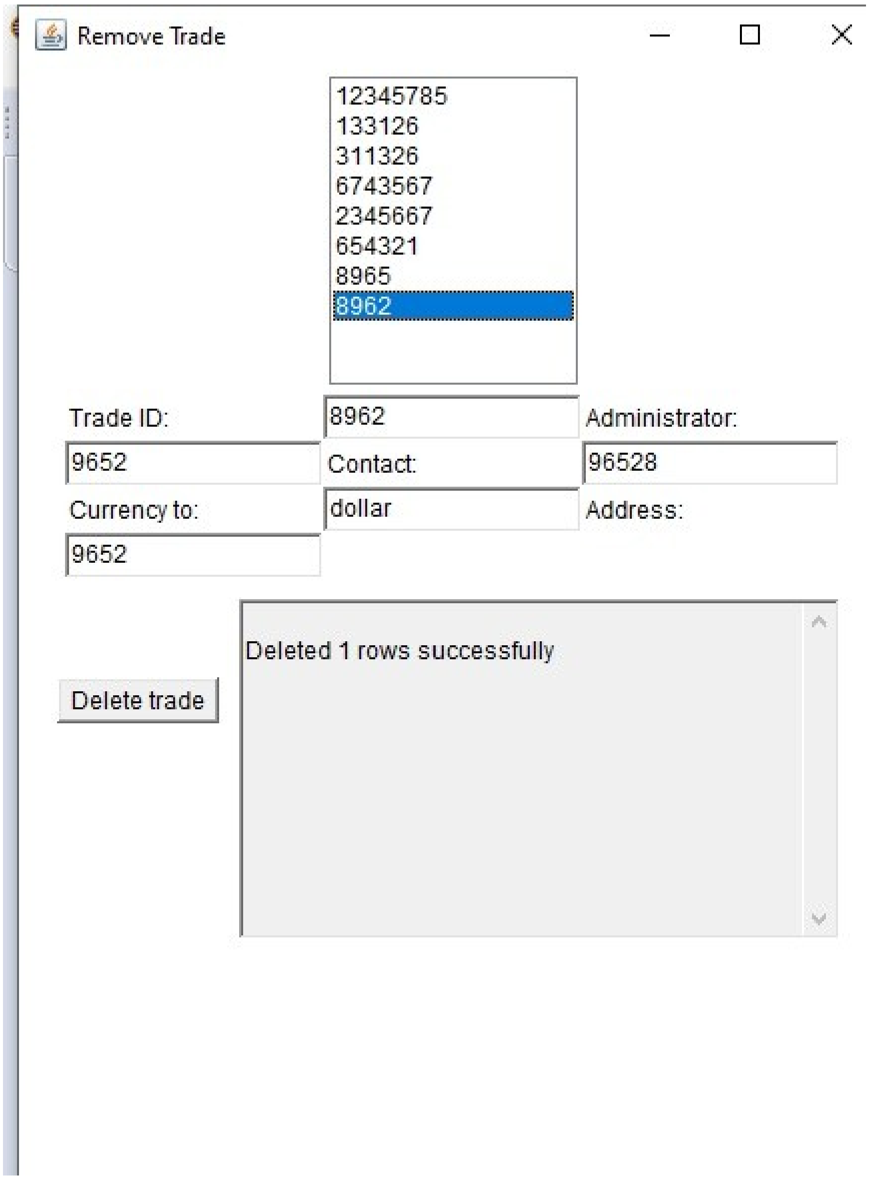
```
Connected.
SQL> select *from trade;

      TRID ADMINISTRATOR           CONTACT CURRENCYTO      ADDRESS
---------- -------------------- ---------- --------------- --------------------
  12345785 revathi               675899590 dollars         6-60
    133126 prathima             9381454667 dollars         7-70
    311326 varshitha            9912825524 dollars         6-60
   6743567 thanuja              9010688988 dollars         4-40
   2345667 karthik              9640410710 dollars         5-50
    654321 preetham             9356457831 dollars         2-20
    879652 soumya                    21421 dollar          20201

7 rows selected.

SQL> select *from trade;

      TRID ADMINISTRATOR           CONTACT CURRENCYTO      ADDRESS
---------- -------------------- ---------- --------------- --------------------
  12345785 revathi               675899590 dollars         6-60
    133126 manasa               9381454667 dollars         7-70
    311326 varshitha            9912825524 dollars         6-60
   6743567 thanuja              9010688988 dollars         4-40
   2345667 karthik              9640410710 dollars         5-50
    654321 preetham             9356457831 dollars         2-20
    879652 soumya                    21421 dollar          20201

7 rows selected.

SQL> _
```

DELETE TRADE:

```
import java.awt.*;
import java.awt.event.*;
import java.sql.*;
public class DeleteTrade extends Frame
{
        Button deleteTradeButton;

        List TradeIDList;
        TextField tridText, administratorText, contactText, currencytoText,addressText;
        TextArea errorText;
        Connection connection;
        Statement statement;
        ResultSet rs;

        public DeleteTrade() {
                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:xe","hema","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);
                }
  }


        private void loadTrade()
        {
                try
                {
                  rs = statement.executeQuery("SELECT * FROM TRADE");
                  while (rs.next())
                  {
                        TradeIDList.add(rs.getString("TRID"));
                  }
                }
                catch (SQLException e)
                {
                 displaySQLErrors(e);
                }
        }

        public void buildGUI()
        {
          TradeIDList = new List(10);
                loadTrade();
                add(TradeIDList);
                {
                //When a list item is selected populate the text fields
                TradeIDList.addItemListener(new ItemListener()
                {
                        public void itemStateChanged(ItemEvent e)
                        {
                                try
                                {
                                        rs = statement.executeQuery("SELECT * FROM trade");
                                        while (rs.next())
                                        {
                                                if (rs.getString("TRID").equals(TradeIDList.getSelectedItem()))
                                                break;
                                        }
                                        if (!rs.isAfterLast())
                                        {
                                                tridText.setText(rs.getString("TRID"));
                                                administratorText.setText(rs.getString("ADMINISTRATOR"));
                                                contactText.setText(rs.getString("CONTACT"));
                                                currencytoText.setText(rs.getString("CURRENCYTO"));
                                                addressText.setText(rs.getString("ADDRESS"));
```

```
                    }
                }
                catch (SQLException selectException)
                {
                    displaySQLErrors(selectException);
                }
            }
        });
{
        //Handle Delete Sailor Button
        deleteTradeButton = new Button("Delete trade");
        deleteTradeButton.addActionListener(new ActionListener()
        {
            public void actionPerformed(ActionEvent e)
            {
                try
                {
                    Statement statement = connection.createStatement();
                    int i = statement.executeUpdate("DELETE FROM trade WHERE trid = '"+TradeIDList.getSelectedItem()+"' and administrator='"+ administratorText.getText()+"' and contact='"+contactText.getText()+"' and currencyTo='"+ currencytoText.getText()+"' and address='"+ addressText.getText()+"'");
                    errorText.append("\nDeleted "+i+ "rows successfully");
                    tridText.setText(null);
                    administratorText.setText(null);
                    contactText.setText(null);
                    currencytoText.setText(null);
                    addressText.setText(null);
                    TradeIDList.removeAll();
                    loadTrade();
```

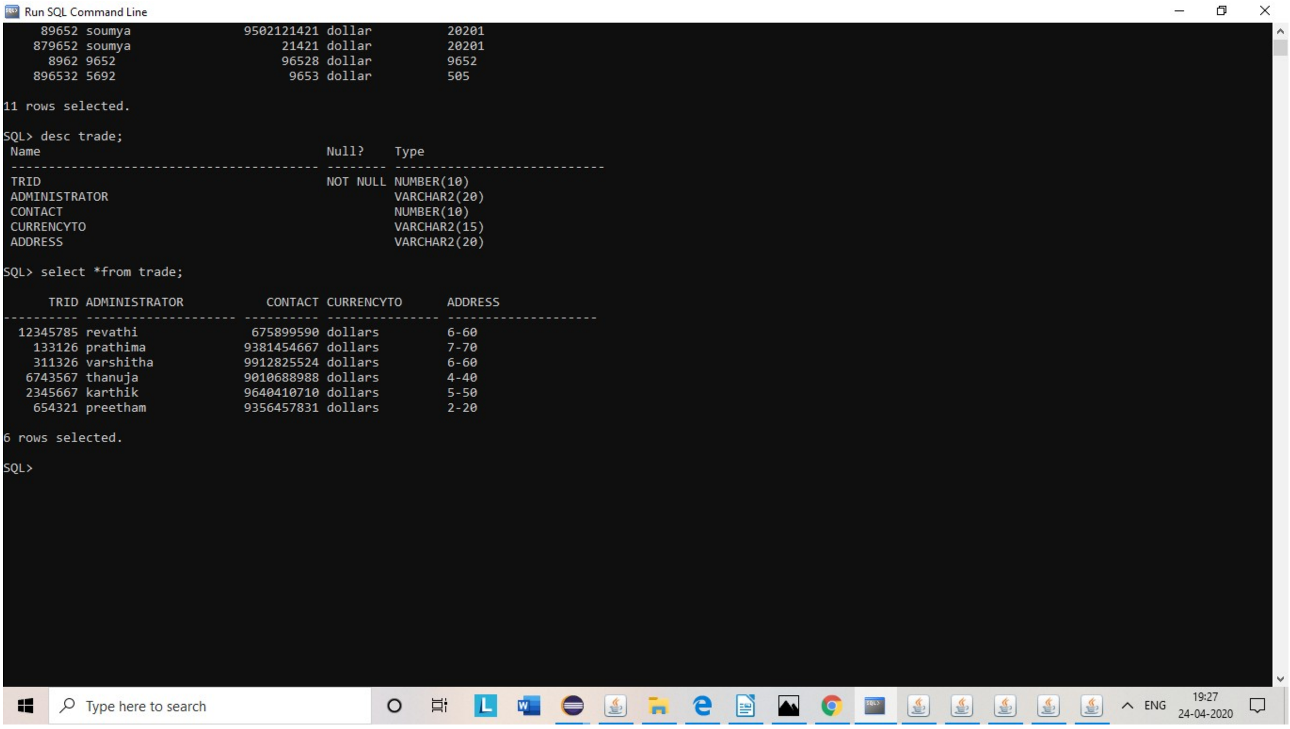
```
                                }
                                catch (SQLException insertException)
                                {
                                        displaySQLErrors(insertException);
                                }
                        }
                });
                {               tridText = new TextField(15);
                administratorText = new TextField(15);
                contactText = new TextField(15);
        currencytoText = new TextField(15);
        addressText = 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("Trade ID:"));
                first.add(tridText);
                first.add(new Label("Administrator:"));
                first.add(administratorText);
                first.add(new Label("Contact:"));
                first.add(contactText);
                first.add(new Label("Currency to:"));
                first.add(currencytoText);
                first.add(new Label("Address:"));
                first.add(addressText);
                Panel second = new Panel(new GridLayout(4, 1));
                second.add(deleteTradeButton);

                Panel third = new Panel();
                third.add(errorText);
                add(first);
                add(second);
        {
        add(third);

                setTitle("Remove Trade");
                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");
        }
public static void main(String[] args)
        {
                DeleteTrade dtrade = new DeleteTrade();

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


                       dtrade.buildGUI();
            }
}
```



12345785
133126
311326
6743567
2345667
654321
8965
8962

Trade ID: 8962
Administrator: 96528
Contact: 9652
Currency to: dollar
Address: 9652

Deleted 1 rows successfully



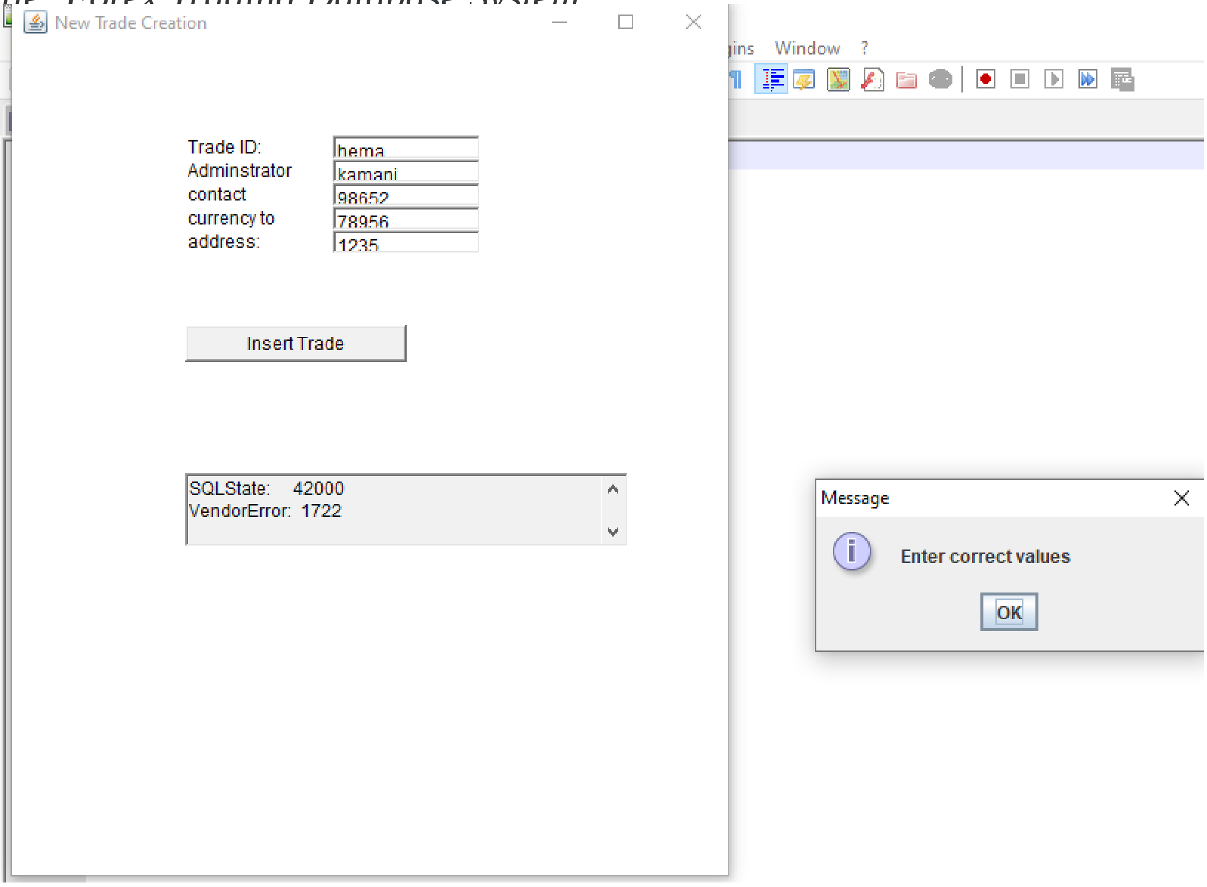
```
     89652 soumya               9502121421 dollar          20201
    879652 soumya                    21421 dollar          20201
      8962 9652                      96528 dollar          9652
    896532 5692                       9653 dollar          505

11 rows selected.

SQL> desc trade;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 TRID                                      NOT NULL NUMBER(10)
 ADMINISTRATOR                                      VARCHAR2(20)
 CONTACT                                            NUMBER(10)
 CURRENCYTO                                         VARCHAR2(15)
 ADDRESS                                            VARCHAR2(20)

SQL> select *from trade;

      TRID ADMINISTRATOR           CONTACT CURRENCYTO      ADDRESS
---------- -------------------- ---------- --------------- --------------------
  12345785 revathi               675899590 dollars         6-60
    133126 prathima             9381454667 dollars         7-70
    311326 varshitha            9912825524 dollars         6-60
   6743567 thanuja              9010688988 dollars         4-40
   2345667 karthik              9640410710 dollars         5-50
    654321 preetham             9356457831 dollars         2-20

6 rows selected.

SQL>
```

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



Trade ID: hema
Adminstrator kamani
contact 98652
currency to 78956
address: 1235

```
SQLState:   42000
VendorError:  1722
```

Enter correct values

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/