Public static void login() {

JFrame f=new JFrame(“Login”);//creating instance of JFrame

JLabel l1,l2;

L1=new JLabel(“Username”); //Create label Username

L1.setBounds(30,15, 100,30); //x axis, y axis, width, height

L2=new JLabel(“Password”); //Create label Password

L2.setBounds(30,50, 100,30);

JTextField F\_user = new JTextField(); //Create text field for username

F\_user.setBounds(110, 15, 200, 30);

JPasswordField F\_pass=new JPasswordField(); //Create text field for password

F\_pass.setBounds(110, 50, 200, 30);

JButton login\_but=new JButton(“Login”);//creating instance of JButton for Login Button

Login\_but.setBounds(130,90,80,25);//Dimensions for button

Login\_but.addActionListener(new ActionListener() { //Perform action

Public void actionPerformed(ActionEvent e){

String username = F\_user.getText(); //Store username entered by the user in the variable “username”

String password = F\_pass.getText(); //Store password entered by the user in the variable “password”

If(username.equals(“”)) //If username is null

{

JOptionPane.showMessageDialog(null,”Please enter username”); //Display dialog box with the message

}

Else if(password.equals(“”)) //If password is null

{

JOptionPane.showMessageDialog(null,”Please enter password”); //Display dialog box with the message

}

Else { //If both the fields are present then to login the user, check wether the user exists already

//System.out.println(“Login connect”);

Connection connection=connect(); //Connect to the database

Try

{

Statement stmt = connection.createStatement();

Stmt.executeUpdate(“USE LIBRARY”); //Use the database with the name “Library”

String st = (“SELECT \* FROM USERS WHERE USERNAME=’”+username+”’ AND PASSWORD=’”+password+”’”); //Retreive username and passwords from users

And passwords from users

ResultSet rs = stmt.executeQuery(st); //Execute query

If(rs.next()==false) { //Move pointer below

System.out.print(“No user”);

JOptionPane.showMessageDialog(null,”Wrong Username/Password!”); //Display Message

}

Else {

f.dispose();

rs.beforeFirst(); //Move the pointer above

while(rs.next())

{

String admin = rs.getString(“ADMIN”); //user is admin

//System.out.println(admin);

String UID = rs.getString(“UID”); //Get user ID of the user

If(admin.equals(“1”)) { //If boolean value 1

Admin\_menu(); //redirect to admin menu

}

Else{

User\_menu(UID); //redirect to user menu for that user ID

}

}

}

}

Catch (Exception ex) {

Ex.printStackTrace();

}

}

}

});

f.add(F\_pass); //add password

f.add(login\_but);//adding button in JFrame

f.add(F\_user); //add user

f.add(l1); // add label1 i.e. for username

f.add(l2); // add label2 i.e. for password

f.setSize(400,180);//400 width and 500 height

f.setLayout(null);//using no layout managers

f.setVisible(true);//making the frame visible

f.setLocationRelativeTo(null);

}

Public static Connection connect()

{

Try {

Class.forName(“com.mysql.cj.jdbc.Driver”);

//System.out.println(“Loaded driver”);

Connection con = DriverManager.getConnection(“jdbc:mysql://localhost/mysql?user=root&password=edureka”);

//System.out.println(“Connected to MySQL”);

Return con;

}

Catch (Exception ex) {

Ex.printStackTrace();

}

Return null;

}

**Public static void create() {**

Try {

Connection connection=connect();

ResultSet resultSet = connection.getMetaData().getCatalogs();

//iterate each catalog in the ResultSet

While (resultSet.next()) {

// Get the database name, which is at position 1

String databaseName = resultSet.getString(1);

If(databaseName.equals(“library”)) {

//System.out.print(“yes”);

Statement stmt = connection.createStatement();

//Drop database if it pre-exists to reset the complete

Database

String sql = “DROP DATABASE library”;

Stmt.executeUpdate(sql);

}

}

Statement stmt = connection.createStatement();

String sql = “CREATE DATABASE LIBRARY”; //Create Database

Stmt.executeUpdate(sql);

Stmt.executeUpdate(“USE LIBRARY”); //Use Database

//Create Users Table

String sql1 = “CREATE TABLE USERS(UID INT NOT NULL AUTO\_INCREMENT PRIMARY KEY, USERNAME VARCHAR(30), PASSWORD VARCHAR(30), ADMIN BOOLEAN)”;

Stmt.executeUpdate(sql1);

//Insert into users table

Stmt.executeUpdate(“INSERT INTO USERS(USERNAME, PASSWORD, ADMIN) VALUES(‘admin’,’admin’,TRUE)”);

//Create Books table

Stmt.executeUpdate(“CREATE TABLE BOOKS(BID INT NOT NULL AUTO\_INCREMENT PRIMARY KEY, BNAME VARCHAR(50), GENRE VARCHAR(20), PRICE INT)”);

//Create Issued Table

Stmt.executeUpdate(“CREATE TABLE ISSUED(IID INT NOT NULL AUTO\_INCREMENT PRIMARY KEY, UID INT, BID INT, ISSUED\_DATE VARCHAR(20), RETURN\_DATE VARCHAR(20), PERIOD INT, FINE INT)”);

//Insert into books table

Stmt.executeUpdate(“INSERT INTO BOOKS(BNAME, GENRE, PRICE) VALUES (‘War and Peace’, ‘Mystery’, 200), (‘The Guest Book’, ‘Fiction’, 300), (‘The Perfect Murder’,’Mystery’, 150), (‘Accidental Presidents’, ‘Biography’, 250), (‘The Wicked King’,’Fiction’, 350)”);

resultSet.close();

}

Catch (Exception ex) {

Ex.printStackTrace();

}

}

**Public static void user\_menu(String UID) {**

JFrame f=new JFrame(“User Functions”); //Give dialog box name as User functions

//f.setDefaultCloseOperation(JFrame.EXIT\_ON\_CLOSE); //Exit user menu on closing the dialog box

JButton view\_but=new JButton(“View Books”);//creating instance of JButton

View\_but.setBounds(20,20,120,25);//x axis, y axis, width, height

View\_but.addActionListener(new ActionListener() {

Public void actionPerformed(ActionEvent e){

JFrame f = new JFrame(“Books Available”); //View books stored in database

//f.setDefaultCloseOperation(JFrame.EXIT\_ON\_CLOSE);

Connection connection = connect();

String sql=”select \* from BOOKS”; //Retreive data from database

Try {

Statement stmt = connection.createStatement(); //connect to database

Stmt.executeUpdate(“USE LIBRARY”); // use librabry

Stmt=connection.createStatement();

ResultSet rs=stmt.executeQuery(sql);

JTable book\_list= new JTable(); //show data in table format

Book\_list.setModel(DbUtils.resultSetToTableModel(rs));

JScrollPane scrollPane = new JScrollPane(book\_list); //enable scroll bar

f.add(scrollPane); //add scroll bar

f.setSize(800, 400); //set dimensions of view books frame

f.setVisible(true);

f.setLocationRelativeTo(null);

} catch (SQLException e1) {

// TODO Auto-generated catch block

JOptionPane.showMessageDialog(null, e1);

}

}

}

);

JButton my\_book=new JButton(“My Books”);//creating instance of JButton

My\_book.setBounds(150,20,120,25);//x axis, y axis, width, height

My\_book.addActionListener(new ActionListener() { //Perform action

Public void actionPerformed(ActionEvent e){

JFrame f = new JFrame(“My Books”); //View books issued by user

//f.setDefaultCloseOperation(JFrame.EXIT\_ON\_CLOSE);

Int UID\_int = Integer.parseInt(UID); //Pass user ID

//.iid,issued.uid,issued.bid,issued.issued\_date,issued.return\_date,issued,

Connection connection = connect(); //connect to database

//retrieve data

String sql=”select distinct issued.\*,books.bname,books.genre,books.price from issued,books “ + “where ((issued.uid=” + UID\_int + “) and (books.bid in (select bid from issued where issued.uid=”+UID\_int+”))) group by iid”;

String sql1 = “select bid from issued where uid=”+UID\_int;

Try {

Statement stmt = connection.createStatement();

//use database

Stmt.executeUpdate(“USE LIBRARY”);

Stmt=connection.createStatement();

//store in array

ArrayList books\_list = new ArrayList();

ResultSet rs=stmt.executeQuery(sql);

JTable book\_list= new JTable(); //store data in table format

Book\_list.setModel(DbUtils.resultSetToTableModel(rs));

//enable scroll bar

JScrollPane scrollPane = new JScrollPane(book\_list);

f.add(scrollPane); //add scroll bar

f.setSize(800, 400); //set dimensions of my books frame

f.setVisible(true);

f.setLocationRelativeTo(null);

} catch (SQLException e1) {

// TODO Auto-generated catch block

JOptionPane.showMessageDialog(null, e1);

}

}

}

);

f.add(my\_book); //add my books

f.add(view\_but); // add view books

f.setSize(300,100);//400 width and 500 height

f.setLayout(null);//using no layout managers

f.setVisible(true);//making the frame visible

f.setLocationRelativeTo(null);

}

**Public static void admin\_menu() {**

JFrame f=new JFrame(“Admin Functions”); //Give dialog box name as admin functions

//f.setDefaultCloseOperation(JFrame.EXIT\_ON\_CLOSE); //

JButton create\_but=new JButton(“Create/Reset”);//creating instance of JButton to create or reset database

Create\_but.setBounds(450,60,120,25);//x axis, y axis, width, height

Width, height

Create\_but.addActionListener(new ActionListener() { //Perform action

Public void actionPerformed(ActionEvent e){

Create(); //Call create function

JOptionPane.showMessageDialog(null,”Database Created/Reset!”); //Open a dialog box and display the message

}

});

JButton view\_but=new JButton(“View Books”);//creating instance of JButton to view books

View\_but.setBounds(20,20,120,25);//x axis, y axis, width, height

View\_but.addActionListener(new ActionListener() {

Public void actionPerformed(ActionEvent e){

JFrame f = new JFrame(“Books Available”);

//f.setDefaultCloseOperation(JFrame.EXIT\_ON\_CLOSE);

Connection connection = connect(); //connect to database

String sql=”select \* from BOOKS”; //select all books

Try {

Statement stmt = connection.createStatement();

Stmt.executeUpdate(“USE LIBRARY”); //use database

Stmt=connection.createStatement();

ResultSet rs=stmt.executeQuery(sql);

JTable book\_list= new JTable(); //view data in table format

Book\_list.setModel(DbUtils.resultSetToTableModel(rs));

//mention scroll bar

JScrollPane scrollPane = new JScrollPane(book\_list);

f.add(scrollPane); //add scrollpane

f.setSize(800, 400); //set size for frame

f.setVisible(true);

f.setLocationRelativeTo(null);

} catch (SQLException e1) {

// TODO Auto-generated catch block

JOptionPane.showMessageDialog(null, e1);

}

}

}

);

JButton users\_but=new JButton(“View Users”);//creating instance of JButton to view users

Users\_but.setBounds(150,20,120,25);//x axis, y axis, width, height

Users\_but.addActionListener(new ActionListener() { //Perform action on click button

Public void actionPerformed(ActionEvent e){

JFrame f = new JFrame(“Users List”);

//f.setDefaultCloseOperation(JFrame.EXIT\_ON\_CLOSE);

Connection connection = connect();

String sql=”select \* from users”; //retrieve all users

Try {

Statement stmt = connection.createStatement();

Stmt.executeUpdate(“USE LIBRARY”); //use database

Stmt=connection.createStatement();

ResultSet rs=stmt.executeQuery(sql);

JTable book\_list= new JTable();

Book\_list.setModel(DbUtils.resultSetToTableModel(rs));

//mention scroll bar

JScrollPane scrollPane = new JScrollPane(book\_list);

f.add(scrollPane); //add scrollpane

f.setSize(800, 400); //set size for frame

f.setVisible(true);

f.setLocationRelativeTo(null);

} catch (SQLException e1) {

// TODO Auto-generated catch block

JOptionPane.showMessageDialog(null, e1);

}

}

}

);

JButton issued\_but=new JButton(“View Issued Books”);//creating instance of JButton to view the issued books

Issued\_but.setBounds(280,20,160,25);//x axis, y axis, width, height

Issued\_but.addActionListener(new ActionListener() {

Public void actionPerformed(ActionEvent e){

JFrame f = new JFrame(“Users List”);

//f.setDefaultCloseOperation(JFrame.EXIT\_ON\_CLOSE);

Connection connection = connect();

String sql=”select \* from issued”;

Try {

Statement stmt = connection.createStatement();

Stmt.executeUpdate(“USE LIBRARY”);

Stmt=connection.createStatement();

ResultSet rs=stmt.executeQuery(sql);

JTable book\_list= new JTable();

Book\_list.setModel(DbUtils.resultSetToTableModel(rs));

JScrollPane scrollPane = new JScrollPane(book\_list);

f.add(scrollPane);

f.setSize(800, 400);

f.setVisible(true);

f.setLocationRelativeTo(null);

} catch (SQLException e1) {

// TODO Auto-generated catch block

JOptionPane.showMessageDialog(null, e1);

}

}

}

);

JButton add\_user=new JButton(“Add User”); //creating instance of JButton to add users

Add\_user.setBounds(20,60,120,25); //set dimensions for button

Add\_user.addActionListener(new ActionListener() {

Public void actionPerformed(ActionEvent e){

JFrame g = new JFrame(“Enter User Details”); //Frame to enter user details

//g.setDefaultCloseOperation(JFrame.EXIT\_ON\_CLOSE);

//Create label

JLabel l1,l2;

L1=new JLabel(“Username”); //label 1 for username

L1.setBounds(30,15, 100,30);

L2=new JLabel(“Password”); //label 2 for password

L2.setBounds(30,50, 100,30);

//set text field for username

JTextField F\_user = new JTextField();

F\_user.setBounds(110, 15, 200, 30);

//set text field for password

JPasswordField F\_pass=new JPasswordField();

F\_pass.setBounds(110, 50, 200, 30);

//set radio button for admin

JRadioButton a1 = new JRadioButton(“Admin”);

A1.setBounds(55, 80, 200,30);

//set radio button for user

JRadioButton a2 = new JRadioButton(“User”);

A2.setBounds(130, 80, 200,30);

//add radio buttons

ButtonGroup bg=new ButtonGroup();

Bg.add(a1);bg.add(a2);

JButton create\_but=new JButton(“Create”);//creating instance of JButton for Create

Create\_but.setBounds(130,130,80,25);//x axis, y axis, width, height

Create\_but.addActionListener(new ActionListener() {

Public void actionPerformed(ActionEvent e){

String username = F\_user.getText();

String password = F\_pass.getText();

Boolean admin = false;

If(a1.isSelected()) {

Admin=true;

}

Connection connection = connect();

Try {

Statement stmt = connection.createStatement();

Stmt.executeUpdate(“USE LIBRARY”);

Stmt.executeUpdate(“INSERT INTO USERS(USERNAME,PASSWORD,ADMIN) VALUES (‘”+username+”’,’”+password+”’,”+admin+”)”);

JOptionPane.showMessageDialog(null,”User added!”);

g.dispose();

}

Catch (SQLException e1) {

// TODO Auto-generated catch block

JOptionPane.showMessageDialog(null, e1);

}

}

});

g.add(create\_but);

g.add(a2);

g.add(a1);

g.add(l1);

g.add(l2);

g.add(F\_user);

g.add(F\_pass);

g.setSize(350,200);//400 width and 500 height

g.setLayout(null);//using no layout managers

g.setVisible(true);//making the frame visible

g.setLocationRelativeTo(null);

}

});

JButton add\_book=new JButton(“Add Book”); //creating instance of JButton for adding books

Add\_book.setBounds(150,60,120,25);

Add\_book.addActionListener(new ActionListener() {

Public void actionPerformed(ActionEvent e){

//set frame wot enter book details

JFrame g = new JFrame(“Enter Book Details”);

//g.setDefaultCloseOperation(JFrame.EXIT\_ON\_CLOSE);

// set labels

JLabel l1,l2,l3;

L1=new JLabel(“Book Name”); //lebel 1 for book name

L1.setBounds(30,15, 100,30);

L2.setBounds(30,53, 100,30);

L3=new JLabel(“Price”); //label 2 for price

L3.setBounds(30,90, 100,30);

//set text field for book name

JTextField F\_bname = new JTextField();

F\_bname.setBounds(110, 15, 200, 30);

//set text field for genre

JTextField F\_genre=new JTextField();

F\_genre.setBounds(110, 53, 200, 30);

//set text field for price

JTextField F\_price=new JTextField();

F\_price.setBounds(110, 90, 200, 30);

JButton create\_but=new JButton(“Submit”);//creating instance of JButton to submit details

Create\_but.setBounds(130,130,80,25);//x axis, y axis, width, height

Create\_but.addActionListener(new ActionListener() {

Public void actionPerformed(ActionEvent e){

// assign the book name, genre, price

String bname = F\_bname.getText();

String genre = F\_genre.getText();

String price = F\_price.getText();

//convert price of integer to int

Int price\_int = Integer.parseInt(price);

Connection connection = connect();

Try {

Statement stmt = connection.createStatement();

Stmt.executeUpdate(“USE LIBRARY”);

Stmt.executeUpdate(“INSERT INTO BOOKS(BNAME,GENRE,PRICE) VALUES (‘”+bname+”’,’”+genre+”’,”+price\_int+”)”);

JOptionPane.showMessageDialog(null,”Book added!”);

g.dispose();

}

Catch (SQLException e1) {

// TODO Auto-generated catch block

JOptionPane.showMessageDialog(null, e1);

}

}

});

g.add(l3);

g.add(create\_but);

g.add(l1);

g.add(l2);

g.add(F\_bname);

g.add(F\_genre);

g.add(F\_price);

g.setSize(350,200);//400 width and 500 height

g.setLayout(null);//using no layout managers

g.setVisible(true);//making the frame visible

g.setLocationRelativeTo(null);

}

});

JButton issue\_book=new JButton(“Issue Book”); //creating instance of JButton to issue books

Issue\_book.setBounds(450,20,120,25);

Issue\_book.addActionListener(new ActionListener() {

Public void actionPerformed(ActionEvent e){

//enter details

JFrame g = new JFrame(“Enter Details”);

//g.setDefaultCloseOperation(JFrame.EXIT\_ON\_CLOSE);

//create labels

JLabel l1,l2,l3,l4;

L1=new JLabel(“Book ID(BID)”); // Label 1 for Book ID

L1.setBounds(30,15, 100,30);

L2=new JLabel(“User ID(UID)”); //Label 2 for user ID

L2.setBounds(30,53, 100,30);

L3=new JLabel(“Period(days)”); //Label 3 for period

L3.setBounds(30,90, 100,30);

L4=new JLabel(“Issued Date(DD-MM-YYYY)”); //Label 4 for issue date

L4.setBounds(30,127, 150,30);

JTextField F\_bid = new JTextField();

F\_bid.setBounds(110, 15, 200, 30);

JTextField F\_uid=new JTextField();

F\_uid.setBounds(110, 53, 200, 30);

JTextField F\_period=new JTextField();

F\_period.setBounds(110, 90, 200, 30);

JTextField F\_issue=new JTextField();

F\_issue.setBounds(180, 130, 130, 30);

JButton create\_but=new JButton(“Submit”);//creating instance of JButton

Create\_but.setBounds(130,170,80,25);//x axis, y axis, width, height

Create\_but.addActionListener(new ActionListener() {

Public void actionPerformed(ActionEvent e){

String uid = F\_uid.getText();

String bid = F\_bid.getText();

String period = F\_period.getText();

String issued\_date = F\_issue.getText();

Int period\_int = Integer.parseInt(period);

Connection connection = connect();

Try {

Statement stmt = connection.createStatement();

Stmt.executeUpdate(“USE LIBRARY”);

Stmt.executeUpdate(“INSERT INTO ISSUED(UID,BID,ISSUED\_DATE,PERIOD) VALUES (‘”+uid+”’,’”+bid+”’,’”+issued\_date+”’,”+period\_int+”)”);

JOptionPane.showMessageDialog(null,”Book Issued!”);

g.dispose();

}

Catch (SQLException e1) {

// TODO Auto-generated catch block

JOptionPane.showMessageDialog(null, e1);

}

}

});

g.add(l3);

g.add(l4);

g.add(create\_but);

g.add(l1);

g.add(l2);

g.add(F\_uid);

g.add(F\_bid);

g.add(F\_period);

g.add(F\_issue);

g.setSize(350,250);//400 width and 500 height

g.setLayout(null);//using no layout managers

g.setVisible(true);//making the frame visible

g.setLocationRelativeTo(null);

}

});

JButton return\_book=new JButton(“Return Book”); //creating instance of JButton to return books

Return\_book.setBounds(280,60,160,25);

Return\_book.addActionListener(new ActionListener() {

Public void actionPerformed(ActionEvent e){

JFrame g = new JFrame(“Enter Details”);

//g.setDefaultCloseOperation(JFrame.EXIT\_ON\_CLOSE);

//set labels

JLabel l1,l2,l3,l4;

L1=new JLabel(“Issue ID(IID)”); //Label 1 for Issue ID

L1.setBounds(30,15, 100,30);

L4=new JLabel(“Return Date(DD-MM-YYYY)”);

L4.setBounds(30,50, 150,30);

JTextField F\_iid = new JTextField();

F\_iid.setBounds(110, 15, 200, 30);

JTextField F\_return=new JTextField();

F\_return.setBounds(180, 50, 130, 30);

JButton create\_but=new JButton(“Return”);//creating instance of JButton to mention return date and calculcate fine

Create\_but.setBounds(130,170,80,25);//x axis, y axis, width, height

Create\_but.addActionListener(new ActionListener() {

Public void actionPerformed(ActionEvent e){

String iid = F\_iid.getText();

String return\_date = F\_return.getText();

Connection connection = connect();

Try {

Statement stmt = connection.createStatement();

Stmt.executeUpdate(“USE LIBRARY”);

//Intialize date1 with NULL value

String date1=null;

String date2=return\_date; //Intialize date2 with return date

//select issue date

ResultSet rs = stmt.executeQuery(“SELECT ISSUED\_DATE FROM ISSUED WHERE IID=”+iid);

While (rs.next()) {

Date1 = rs.getString(1);

}

Try {

Date date\_1=new SimpleDateFormat(“dd-MM-yyyy”).parse(date1);

Date date\_2=new SimpleDateFormat(“dd-MM-yyyy”).parse(date2);

//subtract the dates and store in diff

Long diff = date\_2.getTime() – date\_1.getTime();

//Convert diff from milliseconds to days

Ex.days=(int)(TimeUnit.DAYS.convert(diff, TimeUnit.MILLISECONDS));

TimeUnit.MILLISECONDS));

} catch (ParseException e1) {

// TODO Auto-generated catch block

E1.printStackTrace();

}

//update return date

Stmt.executeUpdate(“UPDATE ISSUED SET RETURN\_DATE=’”+return\_date+”’ WHERE IID=”+iid);

g.dispose();

Connection connection1 = connect();

Statement stmt1 = connection1.createStatement();

Stmt1.executeUpdate(“USE LIBRARY”);

ResultSet rs1 = stmt1.executeQuery(“SELECT PERIOD FROM ISSUED WHERE IID=”+iid); //set period

String diff=null;

While (rs1.next()) {

Diff = rs1.getString(1);

}

Int diff\_int = Integer.parseInt(diff);

If(ex.days&amp;amp;amp;amp;amp;amp;amp;amp;amp;amp;gt;diff\_int) { //If number of days are more than the period then calculcate fine

//System.out.println(ex.days);

Int fine = (ex.days-diff\_int)\*10; //fine for every day after the period is Rs 10.

//update fine in the system

Stmt1.executeUpdate(“UPDATE ISSUED SET FINE=”+fine+” WHERE IID=”+iid);

String fine\_str = (“Fine: Rs. “+fine);

JOptionPane.showMessageDialog(null,fine\_str);

}

JOptionPane.showMessageDialog(null,”Book Returned!”);

}

Catch (SQLException e1) {

// TODO Auto-generated catch block

JOptionPane.showMessageDialog(null, e1);

}

}

});

g.add(l4);

g.add(create\_but);

g.add(l1);

g.add(F\_iid);

g.add(F\_return);

g.setSize(350,250);//400 width and 500 height

g.setLayout(null);//using no layout managers

g.setVisible(true);//making the frame visible

g.setLocationRelativeTo(null);

}

});

f.add(create\_but);

f.add(return\_book);

f.add(issue\_book);

f.add(add\_book);

f.add(issued\_but);

f.add(users\_but);

f.add(view\_but);

f.add(add\_user);

f.setSize(600,200);//400 width and 500 height

f.setLayout(null);//using no layout managers

f.setVisible(true);//making the frame visible

f.setLocationRelativeTo(null);

}

}