Assignment-5

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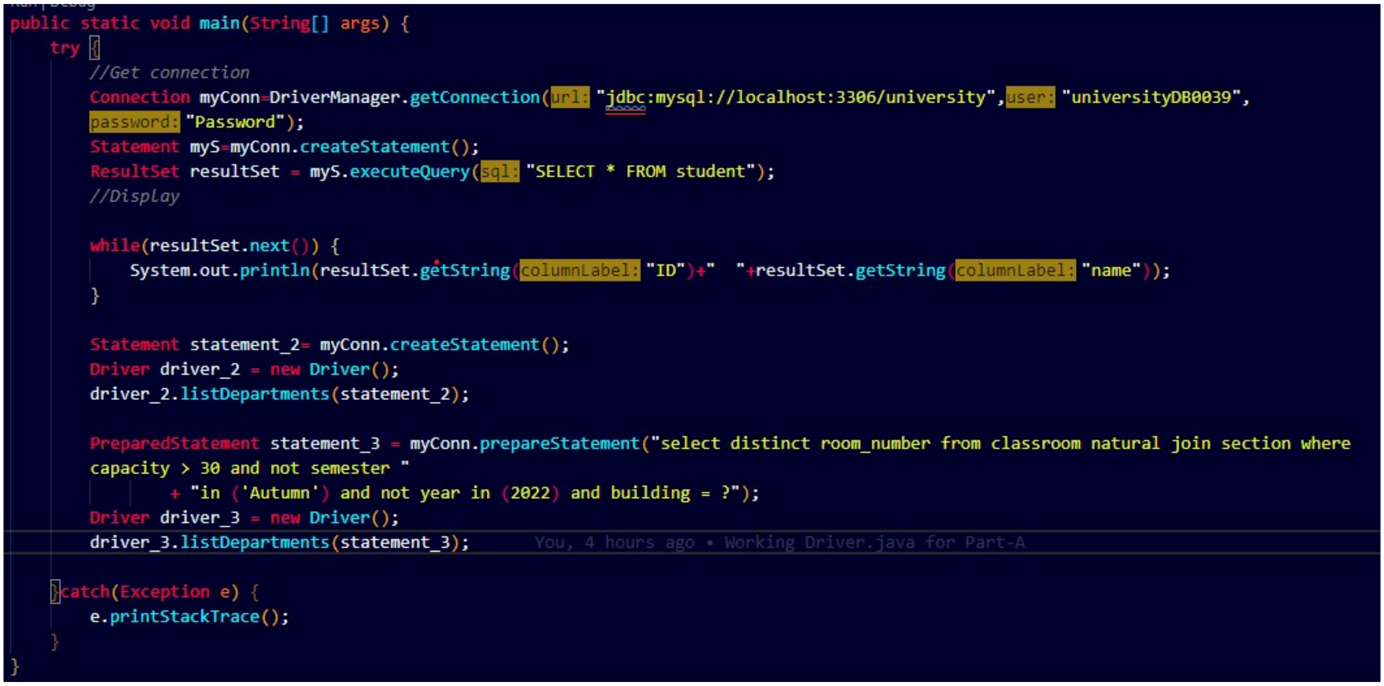
Part-A

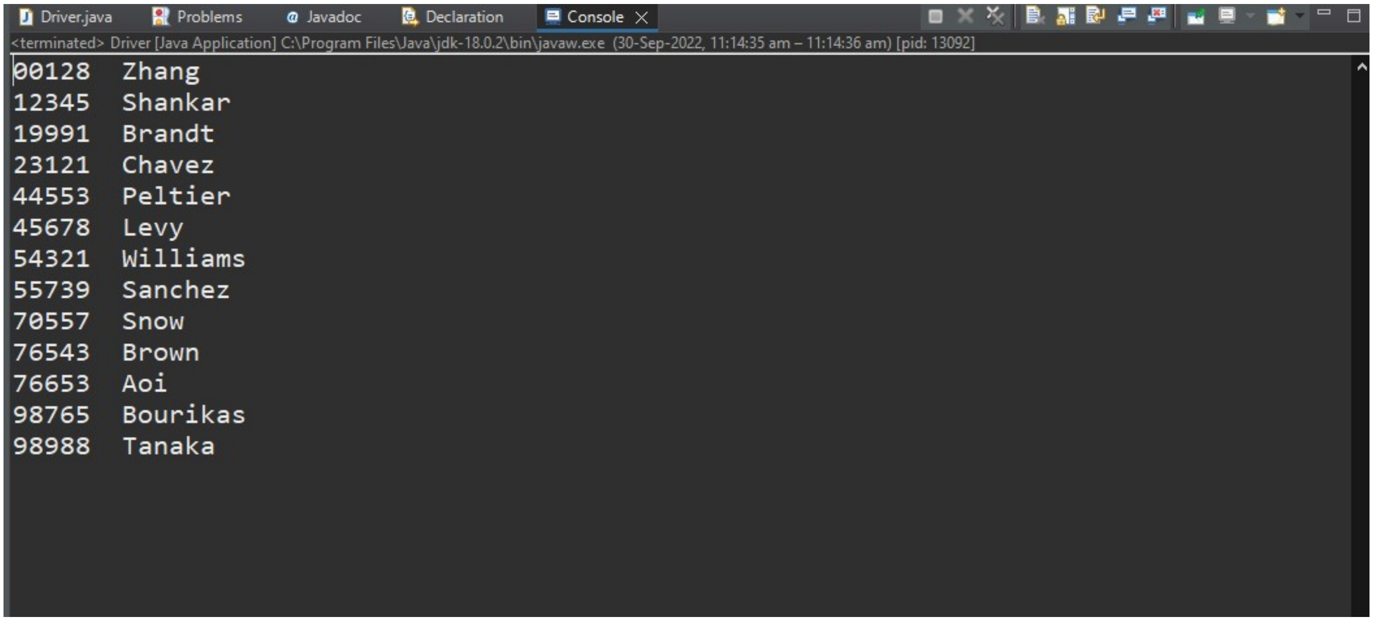
1 Using the handout (JDBC Handout.pdf) which is uploaded on moodle, try out the java+jdbc code

Code for *main* function:



```java
public static void main(String[] args) {
    try {
        //Get connection
        Connection myConn=DriverManager.getConnection(url: "jdbc:mysql://localhost:3306/university",user: "universityDB0039",
        password: "Password");
        Statement myS=myConn.createStatement();
        ResultSet resultSet = myS.executeQuery(sql: "SELECT * FROM student");
        //Display

        while(resultSet.next()) {
            System.out.println(resultSet.getString(columnLabel: "ID")+"  "+resultSet.getString(columnLabel: "name"));
        }

        Statement statement_2= myConn.createStatement();
        Driver driver_2 = new Driver();
        driver_2.listDepartments(statement_2);

        PreparedStatement statement_3 = myConn.prepareStatement("select distinct room_number from classroom natural join section where
        capacity > 30 and not semester "
                + "in ('Autumn') and not year in (2022) and building = ?");
        Driver driver_3 = new Driver();
        driver_3.listDepartments(statement_3);        You, 4 hours ago • Working Driver.java for Part-A

    }catch(Exception e) {
        e.printStackTrace();
    }
}
```

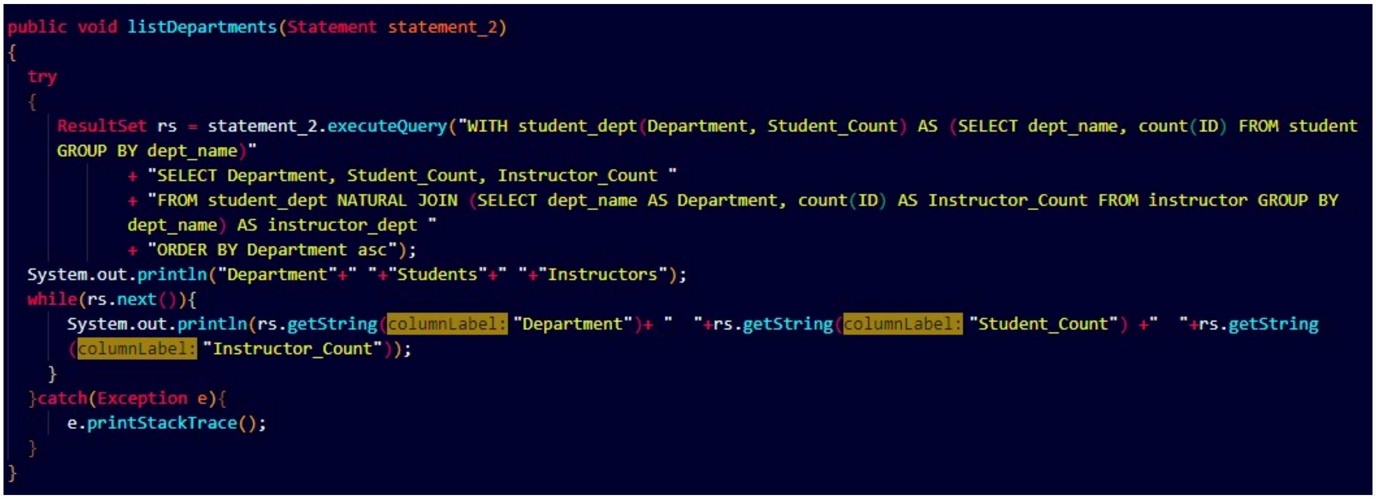
Output:



```
<terminated> Driver [Java Application] C:\Program Files\Java\jdk-18.0.2\bin\javaw.exe  (30-Sep-2022, 11:14:35 am – 11:14:36 am) [pid: 13092]
00128   Zhang
12345   Shankar
19991   Brandt
23121   Chavez
44553   Peltier
45678   Levy
54321   Williams
55739   Sanchez
70557   Snow
76543   Brown
76653   Aoi
98765   Bourikas
98988   Tanaka
```

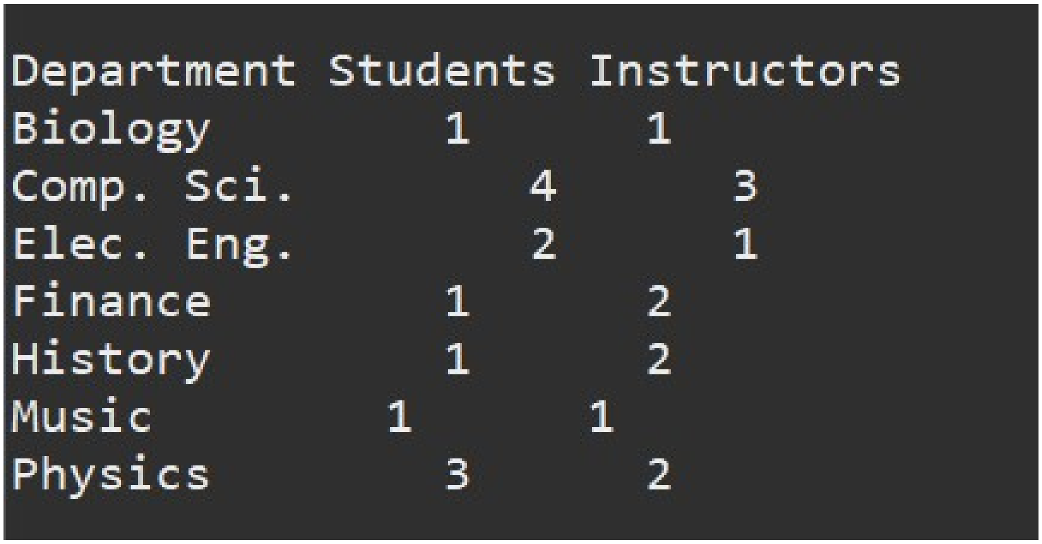
2 Modify the code given to you to list departments (in ASC order) and the total number of students and instructors they have. A template has been made in the provided source code(Driver.java), you need to fill up the template.

Code for *listDepartments* function:



```
public void listDepartments(Statement statement_2)
{
  try
  {
    ResultSet rs = statement_2.executeQuery("WITH student_dept(Department, Student_Count) AS (SELECT dept_name, count(ID) FROM student
    GROUP BY dept_name)"
            + "SELECT Department, Student_Count, Instructor_Count "
            + "FROM student_dept NATURAL JOIN (SELECT dept_name AS Department, count(ID) AS Instructor_Count FROM instructor GROUP BY
            dept_name) AS instructor_dept "
            + "ORDER BY Department asc");
  System.out.println("Department"+"  "+"Students"+"  "+"Instructors");
  while(rs.next()){
      System.out.println(rs.getString(columnLabel: "Department")+ "  "+rs.getString(columnLabel: "Student_Count") +"  "+rs.getString
      (columnLabel: "Instructor_Count"));
    }
  }catch(Exception e){
      e.printStackTrace();
  }
}
```

Output:

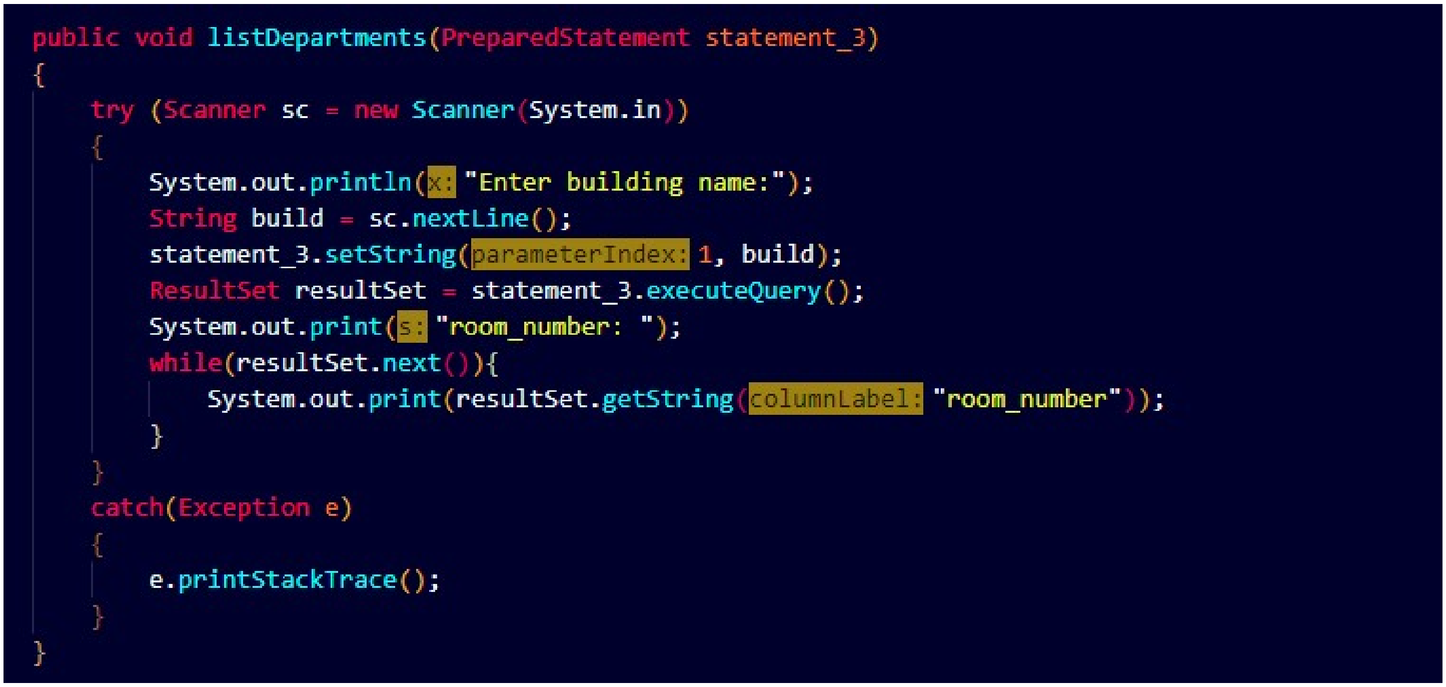


```
Department Students Instructors
Biology        1      1
Comp. Sci.        4      3
Elec. Eng.        2      1
Finance        1      2
History        1      2
Music        1      1
Physics        3      2
```

---

3 Do the following preparedStatement : For a given building, find classrooms (room_no) with capacity more than 30 and in which no courses are scheduled this year and semester. A template has been made in the provided source code(Driver.java), you need to fill up the template.

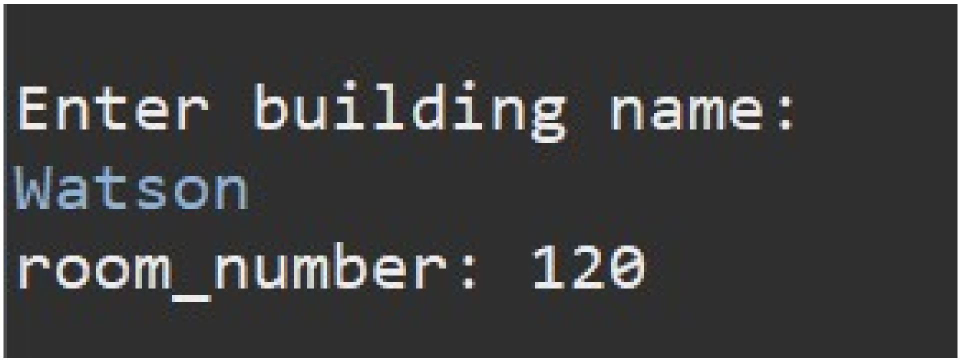
Code for *listDepartments* function:



```java
public void listDepartments(PreparedStatement statement_3)
{
    try (Scanner sc = new Scanner(System.in))
    {
        System.out.println(x: "Enter building name:");
        String build = sc.nextLine();
        statement_3.setString(parameterIndex: 1, build);
        ResultSet resultSet = statement_3.executeQuery();
        System.out.print(s: "room_number: ");
        while(resultSet.next()){
            System.out.print(resultSet.getString(columnLabel: "room_number"));
        }
    }
    catch(Exception e)
    {
        e.printStackTrace();
    }
}
```

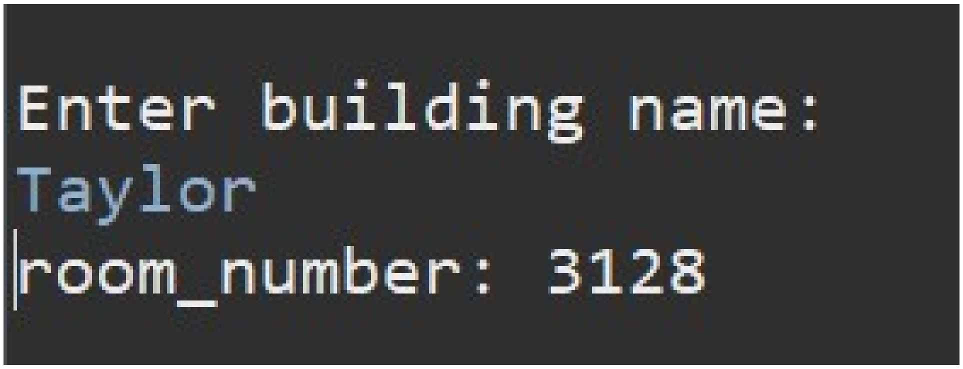
Output:

For building = ‘Watson’



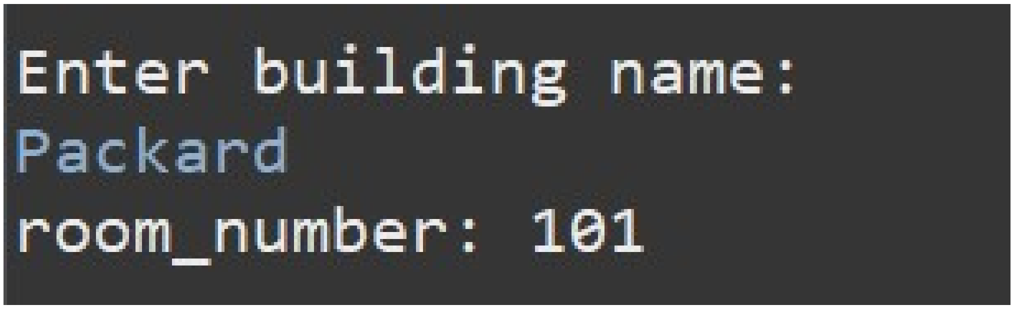
```
Enter building name:
Watson
room_number: 120
```

For building = ‘Taylor’



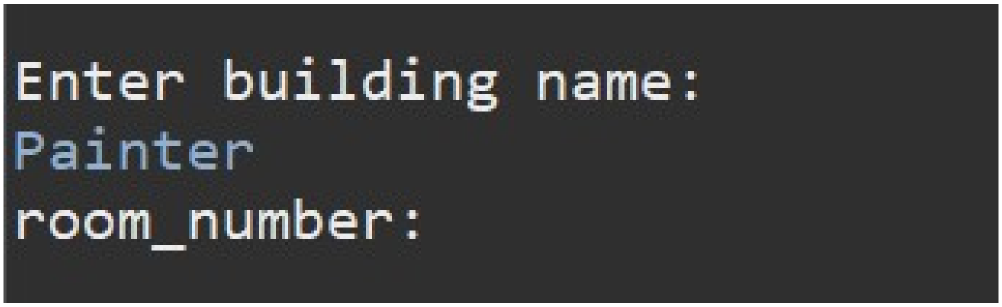
```
Enter building name:
Taylor
room_number: 3128
```

For building = ‘Packard’



```
Enter building name:
Packard
room_number: 101
```

For building = ‘Painter’

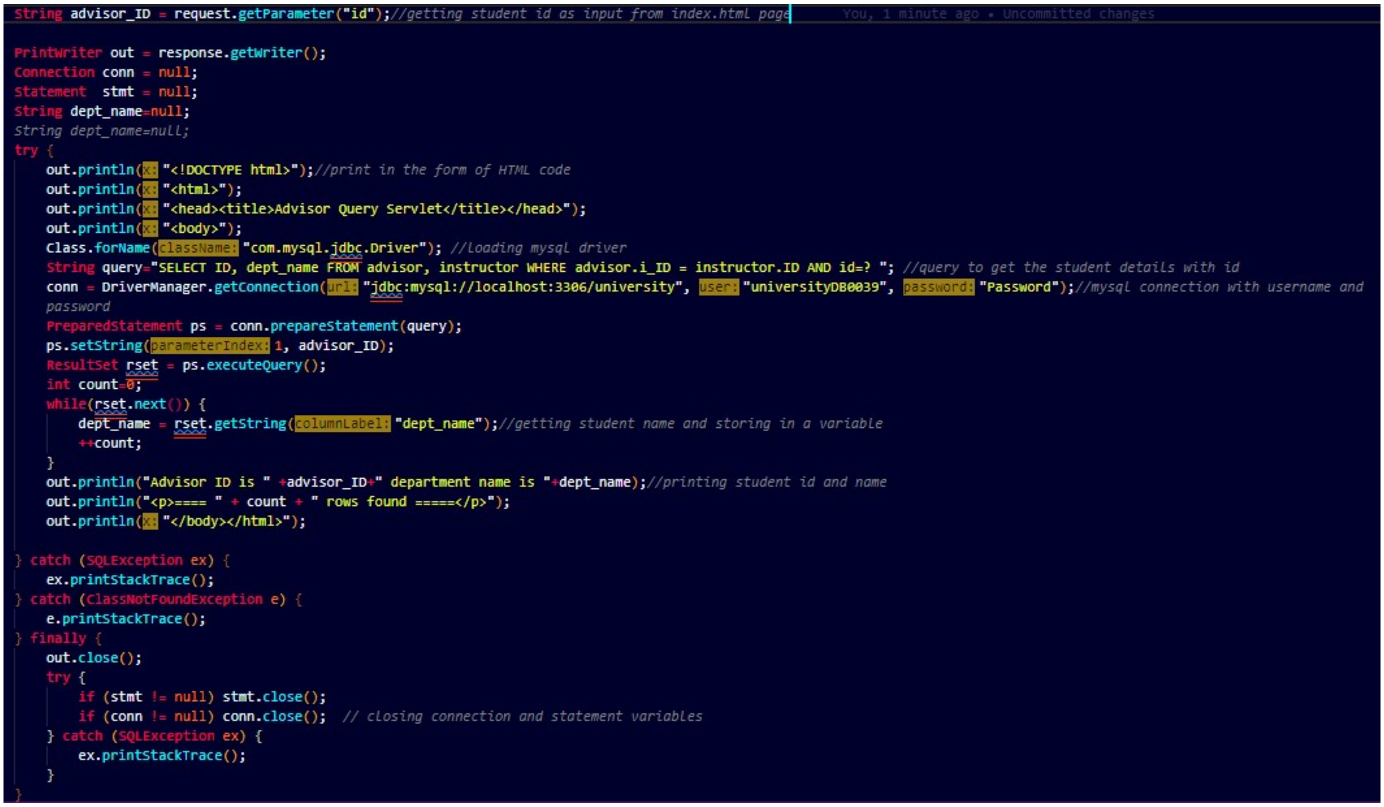


```
Enter building name:
Painter
room_number:
```

Part-B

4 Design a new html page to take advisor id as input. Write a servlet to display the department to which the advisor belongs using the Java and J2EE program. Output should contain advisor id and department name.

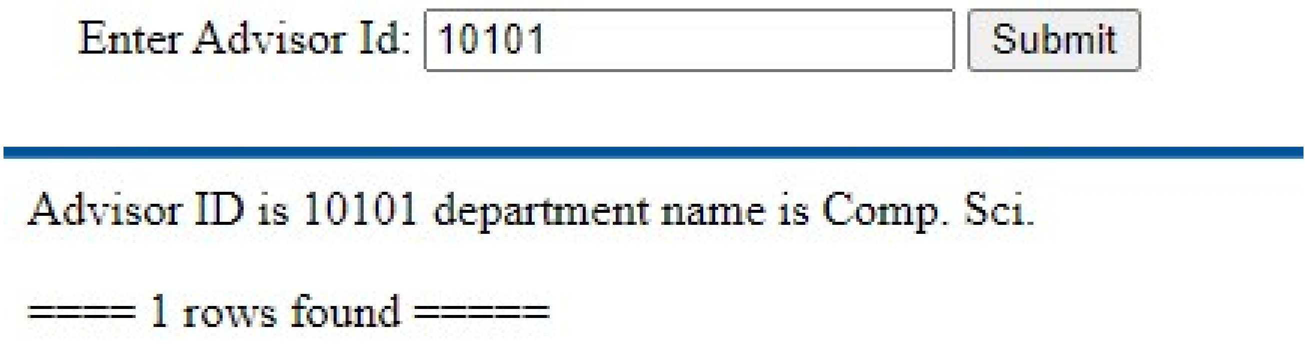
Code:



```
String advisor_ID = request.getParameter("id");//getting student id as input from index.html page      You, 1 minute ago • Uncommitted changes

PrintWriter out = response.getWriter();
Connection conn = null;
Statement  stmt = null;
String dept_name=null;
String dept_name=null;
try {
    out.println(x: "<!DOCTYPE html>");//print in the form of HTML code
    out.println(x: "<html>");
    out.println(x: "<head><title>Advisor Query Servlet</title></head>");
    out.println(x: "<body>");
    Class.forName(className: "com.mysql.jdbc.Driver"); //Loading mysql driver
    String query="SELECT ID, dept_name FROM advisor, instructor WHERE advisor.i_ID = instructor.ID AND id=? "; //query to get the student details with id
    conn = DriverManager.getConnection(url: "jdbc:mysql://localhost:3306/university", user: "universityDB0039", password: "Password");//mysql connection with username and
    password
    PreparedStatement ps = conn.prepareStatement(query);
    ps.setString(parameterIndex: 1, advisor_ID);
    ResultSet rset = ps.executeQuery();
    int count=0;
    while(rset.next()) {
        dept_name = rset.getString(columnLabel: "dept_name");//getting student name and storing in a variable
        ++count;
    }
    out.println("Advisor ID is " +advisor_ID+" department name is "+dept_name);//printing student id and name
    out.println("<p>==== " + count + " rows found =====</p>");
    out.println(x: "</body></html>");

} catch (SQLException ex) {
    ex.printStackTrace();
} catch (ClassNotFoundException e) {
    e.printStackTrace();
} finally {
    out.close();
    try {
        if (stmt != null) stmt.close();
        if (conn != null) conn.close();  // closing connection and statement variables
    } catch (SQLException ex) {
        ex.printStackTrace();
    }
}
```

Output:

ID = 10101

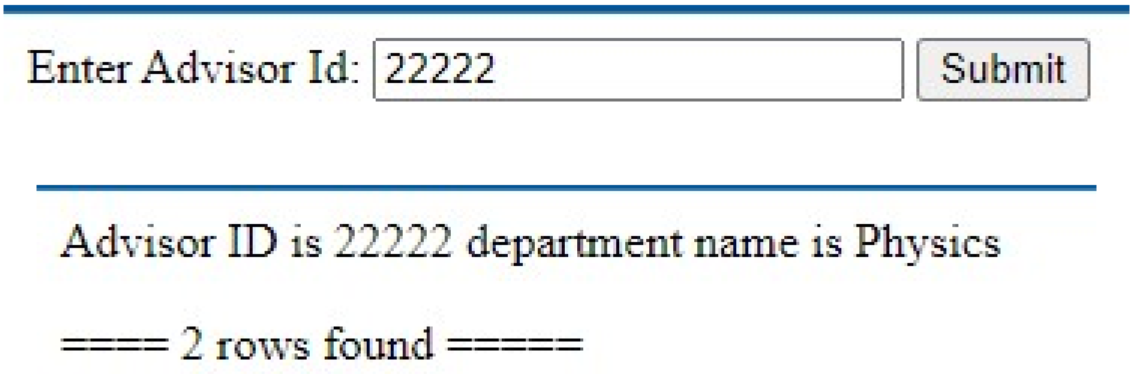


Enter Advisor Id: 10101

Advisor ID is 10101 department name is Comp. Sci.

==== 1 rows found =====

ID = 22222

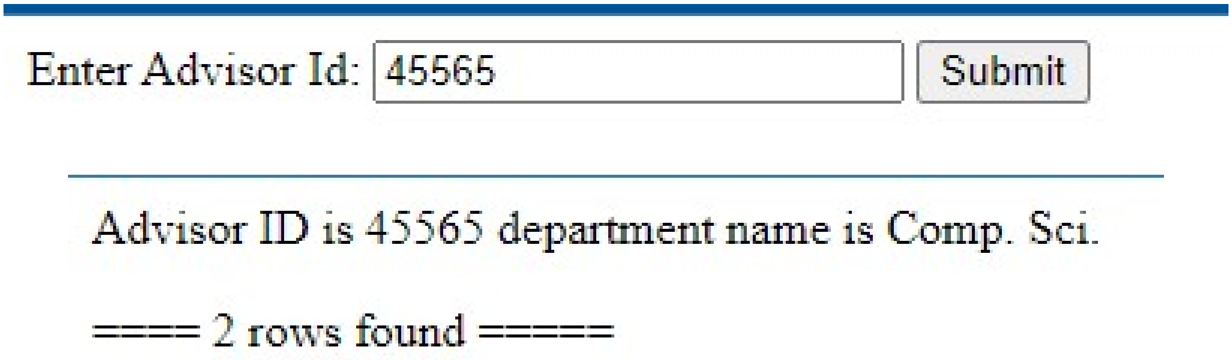


Enter Advisor Id: 22222

Advisor ID is 22222 department name is Physics

==== 2 rows found =====

ID = 45565

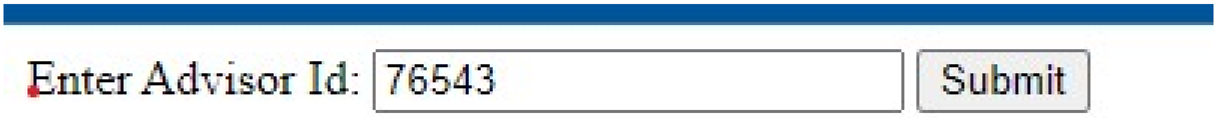


Enter Advisor Id: 45565

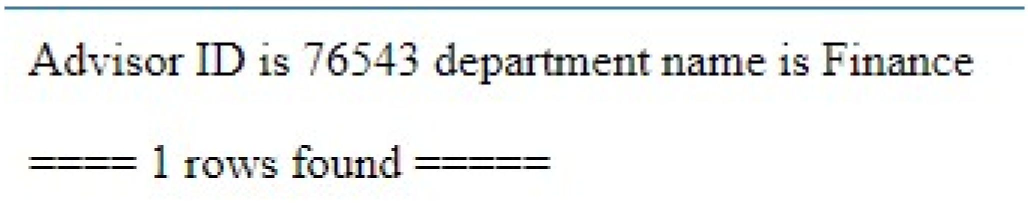
Advisor ID is 45565 department name is Comp. Sci.

==== 2 rows found =====

ID = 76543



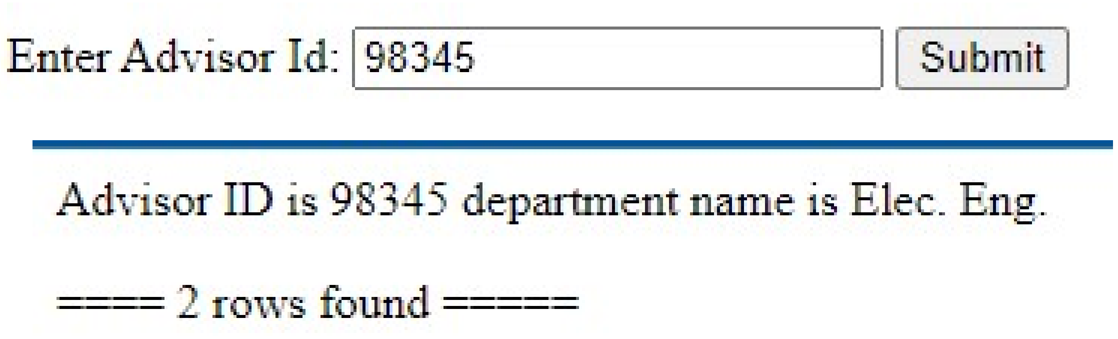
Enter Advisor Id: 76543



Advisor ID is 76543 department name is Finance

==== 1 rows found =====

ID = 98345



Enter Advisor Id: 98345

Advisor ID is 98345 department name is Elec. Eng.

==== 2 rows found =====