```
1   <%@ page language="java" contentType="text/html; charset=ISO-8859-1"
2       pageEncoding="ISO-8859-1"%>
3   <!DOCTYPE html>
4   <html>
5   <head>
6   <meta charset="ISO-8859-1">
7   <title>Add Student</title>
8   </head>
9   <body>
10  <form action = "AddStudentToDatabase" >
11  First name (Required):
12      <input type = "text"  name = "fname"> <br>
13  Last name:
14      <input type = "text" name = "lname"> <br>
15  DOB (dd/mm/yyyy):
16      <input type = "text" name = "DOB"> <br>
17  Class (Required):
18      <input type = "text" name = "class"> <br>
19      <input type = "submit" value = "add">
20  </form>
21  <form action = "index.jsp" >
22      <input type = "submit" value = "Back">
23  </form>
24  </body>
25  </html>
```

```jsp
<%@ page language="java" contentType="text/html; charset=ISO-8859-1"
    pageEncoding="ISO-8859-1"%>
<!DOCTYPE html>
<html>
<head>
<meta charset="ISO-8859-1">
<title>Add Student</title>
</head>
<body>
    ${back} <br>
</body>
</html>
```

```java
 1   package pages;
 2   import java.io.IOException;
 3   import java.sql.Connection;
 4   import java.sql.PreparedStatement;
 5   import java.sql.ResultSet;
 6   import java.sql.Statement;
 7   import java.text.SimpleDateFormat;
 8   import javax.servlet.ServletException;
 9   import javax.servlet.http.HttpServlet;
10   import javax.servlet.http.HttpServletRequest;
11   import javax.servlet.http.HttpServletResponse;
12
13   /**
14    * Servlet implementation class AddStudentToDatabase
15    */
16   public class AddStudentToDatabase extends HttpServlet {
17       private static final long serialVersionUID = 1L;
18
19       /**
20        * @see HttpServlet#HttpServlet()
21        */
22       public AddStudentToDatabase() {
23           super();
24           // TODO Auto-generated constructor stub
25       }
26
27       /**
28        * @see HttpServlet#doGet(HttpServletRequest request, HttpServletResponse response)
29        */
30       protected void doGet(HttpServletRequest request, HttpServletResponse response)
31       throws ServletException, IOException {
31           try {
32               Connection conn = CreateDatabase.connect();
33               Statement stat = conn.createStatement();
34               PreparedStatement pstat;
35               ResultSet rs;
36               String firstname = request.getParameter("fname");
37               String lastname = request.getParameter("lname");
38               String classs = request.getParameter("class");
39               long DOB = 0;
40               pstat = conn.prepareStatement("INSERT INTO Student_Details (FirstName,
                   LastName, DOB, Class) VALUES ( ?, ?, ?, ?);");
41               pstat.setString(1, firstname);
42               pstat.setString(2, lastname);
43               pstat.setString(4, classs);
44               if (request.getParameter("DOB").equals("null")) {
45                   pstat.setNull(3, java.sql.Types.INTEGER);
46               }
47               else {
48                   DOB = (new
                       SimpleDateFormat("ddMMyyyy").parse(request.getParameter("DOB").replaceAll
                       ("/", "")).getTime()) / 1000;
49                   pstat.setLong(3, DOB);
50               }
51               pstat.execute();
52               rs = stat.executeQuery("SELECT last_insert_rowid();");
53               int StudentID = rs.getInt(1);
54               rs = stat.executeQuery("SELECT DISTINCT TestID FROM Test_Record;");
55               while(rs.next()) {
56                   stat.execute("INSERT INTO Test_Record (StudentID, TestID) VALUES (" +
                       StudentID + ", '" + rs.getString(1) + "');");
57               }
58               String back = ("Student ID: " + StudentID + "<br> <form action =
                   \"AddStudent.jsp\"> <input type = \"submit\" value = \"Back\"> </form>");
59               request.setAttribute("back", back);
60               request.getRequestDispatcher("Addstudentback.jsp").forward(request,
                   response);
61           } catch (Exception e) {
62               e.printStackTrace();
```

```java
63                }
64            }

66        /**
67         * @see HttpServlet#doPost(HttpServletRequest request, HttpServletResponse response)
68         */
69        protected void doPost(HttpServletRequest request, HttpServletResponse response)
           throws ServletException, IOException {
70            // TODO Auto-generated method stub
71            doGet(request, response);
72        }

74    }
```

```java
1   package pages;
2
3   import java.io.IOException;
4   import java.sql.Connection;
5   import java.sql.PreparedStatement;
6   import java.sql.ResultSet;
7   import java.sql.Statement;
8
9   import javax.servlet.ServletException;
10  import javax.servlet.http.HttpServlet;
11  import javax.servlet.http.HttpServletRequest;
12  import javax.servlet.http.HttpServletResponse;
13
14  /**
15   * Servlet implementation class AddTestNames
16   */
17  public class AddTestNames extends HttpServlet {
18      private static final long serialVersionUID = 1L;
19
20      /**
21       * @see HttpServlet#HttpServlet()
22       */
23      public AddTestNames() {
24          super();
25          // TODO Auto-generated constructor stub
26      }
27
28      /**
29       * @see HttpServlet#doGet(HttpServletRequest request, HttpServletResponse response)
30       */
31      protected void doGet(HttpServletRequest request, HttpServletResponse response)
32      throws ServletException, IOException {
33          try {
34              Connection conn = CreateDatabase.connect();
35              Statement stat = conn.createStatement();
36              PreparedStatement pstat;
37              String Class = request.getParameter("Class");
38              ResultSet rs = null;
39              if (Class.equals("all")) {
40                  rs = stat.executeQuery("SELECT StudentID FROM Student_Details");
41              }
42              else {
43                  pstat = conn.prepareStatement("SELECT StudentID FROM Student_Details
44                  WHERE Class = ?");
45                  pstat.setString(1, Class);
46                  rs = pstat.executeQuery();
47              }
48              String name = request.getParameter("Name");
49              String subject = request.getParameter("Subject");
50              while(rs.next()) {
51                  pstat = conn.prepareStatement("INSERT INTO Test_Record (StudentID,
52                  TestID, Subject) VALUES (?, ?, ?);");
53                  pstat.setInt(1, rs.getInt(1));
54                  pstat.setString(2, name);
55                  pstat.setString(3, subject);
56                  pstat.execute();
57              }
58              String back = ("<form action = \"TestAdder.jsp\"> <input type = \"submit\"
59              value = \"Back\"> </form> <form action = \"TestMarkerPasser\"> <input type
60              = \"hidden\" name = \"TestName\" value = \"" + name + "\"> <input type =
61              \"submit\" value = \"Mark test\"> </form>");
62              request.setAttribute("back", back);
63              request.getRequestDispatcher("TestMarkerpass.jsp").forward(request,
64              response);
65          }
66          catch(Exception e) {
67              e.printStackTrace();
68          }
69      }
```

```java
	/**
	 * @see HttpServlet#doPost(HttpServletRequest request, HttpServletResponse response)
	 */
	protected void doPost(HttpServletRequest request, HttpServletResponse response)
	throws ServletException, IOException {
		// TODO Auto-generated method stub
		doGet(request, response);
	}

}
```

```jsp
1   <%@ page language="java" contentType="text/html; charset=ISO-8859-1"
2       pageEncoding="ISO-8859-1"%>
3   <%@ taglib prefix="c" uri="http://java.sun.com/jsp/jstl/core" %>
4   <!DOCTYPE html>
5   <html>
6   <head>
7   <meta charset="ISO-8859-1">
8   <title>Attendance</title>
9   </head>
10  <body>
11  <form action = "AttendanceDatabaseIn">
12  Date (dd/mm/yyyy):
13      <input type = "text" id = "Adate" name = "Adate"> <br>
14      <c:forEach items="${names}" var="name">
15          <c:out value= "${name}"></c:out>
16          <input type = "checkbox" id = "${name}" name = "${name}"> <br>
17      </c:forEach>
18      <input type = "hidden" id = "class2" name = "class2" value = "${class2}" readonly>
        <br>
19      <input type = "submit" value = "submit">
20  </form>
21  <form action = "index.jsp" >
22      <input type = "submit" value = "Back">
23  </form>
24  </body>
25  </html>
```

```java
package pages;

import java.io.IOException;
import java.sql.Connection;
import java.sql.PreparedStatement;
import java.sql.ResultSet;
import java.sql.SQLException;
import java.util.ArrayList;
import java.util.List;
import java.util.stream.Collectors;

import javax.servlet.ServletException;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;

/**
 * Servlet implementation class AttendanceDatabase
 */
public class AttendanceDatabase extends HttpServlet {
    private static final long serialVersionUID = 1L;

    /**
     * @see HttpServlet#HttpServlet()
     */
    public AttendanceDatabase() {
        super();
        // TODO Auto-generated constructor stub
    }

    /**
     * @see HttpServlet#doGet(HttpServletRequest request, HttpServletResponse response)
     */
    protected void doGet(HttpServletRequest request, HttpServletResponse response)
    throws ServletException, IOException {
        ResultSet rs = null;
        try {
            Connection conn = CreateDatabase.connect();
            PreparedStatement pstat = conn.prepareStatement("SELECT FirstName, LastName
            FROM Student_Details WHERE Class = ?");
            String classe = request.getParameter("class");
            pstat.setString(1, classe);
            rs = pstat.executeQuery();
            List<String> names = new ArrayList<String>();
            while(rs.next()) {
                names.add(rs.getString("LastName") + " " + rs.getString("FirstName"));
            }
            names = names.stream().sorted().collect(Collectors.toList());
            request.setAttribute("names", names);
            request.setAttribute("class2", classe);
            request.getRequestDispatcher("Attendance.jsp").forward(request, response);
        } catch (SQLException e) {
            e.printStackTrace();
        }
    }

    /**
     * @see HttpServlet#doPost(HttpServletRequest request, HttpServletResponse response)
     */
    protected void doPost(HttpServletRequest request, HttpServletResponse response)
    throws ServletException, IOException {
        // TODO Auto-generated method stub
        doGet(request, response);
    }

}
```

```java
1    package pages;
2
3    import java.io.IOException;
4    import java.sql.Connection;
5    import java.sql.PreparedStatement;
6    import java.sql.ResultSet;
7    import java.text.SimpleDateFormat;
8    import java.util.ArrayList;
9    import java.util.List;
10
11   import javax.servlet.ServletException;
12   import javax.servlet.http.HttpServlet;
13   import javax.servlet.http.HttpServletRequest;
14   import javax.servlet.http.HttpServletResponse;
15
16   /**
17    * Servlet implementation class AttendanceDatabaseIn
18    */
19   public class AttendanceDatabaseIn extends HttpServlet {
20       private static final long serialVersionUID = 1L;
21
22       /**
23        * @see HttpServlet#HttpServlet()
24        */
25       public AttendanceDatabaseIn() {
26           super();
27           // TODO Auto-generated constructor stub
28       }
29
30       /**
31        * @see HttpServlet#doGet(HttpServletRequest request, HttpServletResponse response)
32        */
33       protected void doGet(HttpServletRequest request, HttpServletResponse response)
34       throws ServletException, IOException {
34           // TODO Auto-generated method stub
35           try {
36               Connection conn = CreateDatabase.connect();
37               ResultSet rs;
38               List<String> names = new ArrayList<String>();
39               String Class = request.getParameter("class2");
40               ArrayList<String> fnames = new ArrayList<String>();
41               ArrayList<String> lnames = new ArrayList<String>();
42
43               PreparedStatement pstat = conn.prepareStatement("SELECT FirstName, LastName
                 FROM Student_Details WHERE Class = ?");
44               pstat.setString(1, Class);
45               rs = pstat.executeQuery();
46               while(rs.next()) {
47                   String tempf = rs.getString("FirstName");
48                   String templ = rs.getString("LastName");
49                   lnames.add(templ);
50                   fnames.add(tempf);
51                   names.add(templ + " " + tempf);
52               }
53
54               Long date = (new
                 SimpleDateFormat("ddMMyyyy").parse(request.getParameter("Adate").replaceAll("
                 /", "")).getTime()) / 1000;
55               response.getWriter().print(names.get(0) + " " + date + " " + Class);
56               for (int i = 0; i < names.size(); i ++) {
57                   pstat = conn.prepareStatement("SELECT StudentID FROM Student_Details
                     WHERE FirstName = ? AND LastName = ? AND Class = ?");
58                   pstat.setString(1, fnames.get(i));
59                   pstat.setString(2, lnames.get(i));
60                   pstat.setString(3, Class);
61                   rs = pstat.executeQuery();
62                   int StudentID = rs.getInt(1);
63                   pstat = conn.prepareStatement("INSERT OR REPLACE INTO Attendance_Record
                     (StudentID, Date, Attendance) VALUES (?, ?, ?);");
```

```java
                        pstat.setInt(1, StudentID);
                        pstat.setLong(2, date);
                        try {
                            if(request.getParameter(names.get(i)).equals("on")) {
                                pstat.setInt(3, 1);
                            }
                        }
                        catch(Exception e) {
                            pstat.setInt(3, 0);
                            }
                        pstat.execute();
                    }
                request.getRequestDispatcher("index.jsp").forward(request, response);
                }
            catch(Exception e) {
                e.printStackTrace();
            }
        }

    /**
     * @see HttpServlet#doPost(HttpServletRequest request, HttpServletResponse response)
     */
    protected void doPost(HttpServletRequest request, HttpServletResponse response)
    throws ServletException, IOException {
        // TODO Auto-generated method stub
        doGet(request, response);
    }

}
```

```jsp
<%@ page language="java" contentType="text/html; charset=ISO-8859-1"
    pageEncoding="ISO-8859-1"%>
    <%@ taglib prefix="c" uri="http://java.sun.com/jsp/jstl/core" %>
<!DOCTYPE html>
<html>
<head>
<meta charset="ISO-8859-1">
<title>Check Attendance</title>
</head>
<body>
<form action="CheckAttendanceDatabase">
Date:
    <input type = "text" name = "date">
    <input type = "submit" value = "submit">
</form>
<form action = "index.jsp" >
    <input type = "submit" value = "Back">
</form>
<table style="width:100%">

<tr>
    <th>Student ID</th>
    <th>Name</th>
    <th>Attendance</th>
</tr>

<c:forEach items="${Rows}" var="row">
        ${row}
    </c:forEach>

</table>
</body>
</html>
```

```java
package pages;

import java.io.IOException;
import java.sql.Connection;
import java.sql.ResultSet;
import java.sql.Statement;
import java.text.SimpleDateFormat;
import java.util.ArrayList;
import java.util.List;
import java.util.stream.Collectors;

import javax.servlet.ServletException;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;

/**
 * Servlet implementation class CheckAttendanceDatabase
 */
public class CheckAttendanceDatabase extends HttpServlet {
    private static final long serialVersionUID = 1L;

    /**
     * @see HttpServlet#HttpServlet()
     */
    public CheckAttendanceDatabase() {
        super();
        // TODO Auto-generated constructor stub
    }

    /**
     * @see HttpServlet#doGet(HttpServletRequest request, HttpServletResponse response)
     */
    protected void doGet(HttpServletRequest request, HttpServletResponse response)
    throws ServletException, IOException {
        try {
            Connection conn = CreateDatabase.connect();
            Statement stat = conn.createStatement();
            Statement stat2 = conn.createStatement();
            Long date = (new
            SimpleDateFormat("ddMMyyyy").parse(request.getParameter("date").replaceAll("/
            ", "")).getTime()) / 1000;
            ResultSet rs = stat.executeQuery("SELECT StudentID, Attendance FROM
            Attendance_Record WHERE Date = " + date + ";");
            int StudentID;
            boolean Attendance = false;
            String name;
            String Class;
            List<String> rows = new ArrayList<String>();
            while (rs.next()) {
                StudentID = rs.getInt(1);
                if (rs.getInt(2) == 1) {
                    Attendance = true;
                }
                ResultSet rs2 = stat2.executeQuery("Select LastName, FirstName, Class
                FROM Student_Details WHERE StudentID = '" + StudentID + "';");
                name = rs2.getString(1) + " " + rs2.getString(2);
                rs2.close();
                String tempString = name + "?<tr> <td> " + StudentID + "</td> <td> " +
                name + " </td> <td> " + Attendance + " </td> </tr>";
                rows.add(tempString);
            }
            rows = rows.stream().sorted().collect(Collectors.toList());
            List<String> Rows = new ArrayList<String>();
            for (int i = 0; i < rows.size(); i++) {
                Rows.add(rows.get(i).split("\\?")[1]);
            }
            request.setAttribute("Rows", Rows);
            request.getRequestDispatcher("CheckAttendance.jsp").forward(request,
```

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

    }

    /**
     * @see HttpServlet#doPost(HttpServletRequest request, HttpServletResponse response)
     */
    protected void doPost(HttpServletRequest request, HttpServletResponse response)
    throws ServletException, IOException {
        // TODO Auto-generated method stub
        doGet(request, response);
    }

}
```

```java
package pages;

import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.Statement;

public class CreateDatabase {
    static Connection conn = null;
    public static Connection connect() {
        Statement stat;
        if (conn == null) {
            try {
                Class.forName("org.sqlite.JDBC");
                conn = DriverManager.getConnection("jdbc:sqlite:Student_Database.db");
                stat = conn.createStatement();
                stat.execute("CREATE TABLE IF NOT EXISTS Student_Details (StudentID
                    INTEGER PRIMARY KEY, FirstName TEXT NOT NULL, LastName TEXT, DOB
                    INTEGER, Class TEXT NOT NULL);");
                stat.execute("CREATE TABLE IF NOT EXISTS Attendance_Record (StudentID
                    INTEGER, Date INTEGER, Attendance INTEGER, PRIMARY KEY(StudentID,
                    Date));");
                stat.execute("CREATE TABLE IF NOT EXISTS Test_Record (StudentID
                    INTEGER, TestID TEXT, Subject TEXT, Score INTEGER, CompletedOn INTEGER,
                    PRIMARY KEY(StudentID, TestID));");
                //stat.execute("CREATE TABLE IF NOT EXISTS Leaderboard (StudentID
                    INTEGER PRIMARY KEY, Mark INTEGER, CompletedTasks INTEGER);");
            }
            catch(Exception e) {
                e.printStackTrace();
            }
        }
        return(conn);
    }
    public static void main (String [] args) {
        connect();
        System.out.print("done");
    }
}
```

```jsp
1   <%@ page language="java" contentType="text/html; charset=ISO-8859-1"
2       pageEncoding="ISO-8859-1"%>
3   <!DOCTYPE html>
4   <html>
5   <head>
6   <meta charset="ISO-8859-1">
7   <title>Edit Student</title>
8   </head>
9   <body>
10  <form action="EditStudentDatabaase" method = "post">
11  First name:
12      <input type = "text" name = "fname" value = "${fname}"> <br>
13  Last name:
14      <input type = "text" name = "lname" value = "${lname}"> <br>
15  Class:
16      <input type = "text" name = "Class" value = "${Class}"> <br>
17  DOB (dd/mm/yyyy):
18      <input type = "text" name = "date" value = "${date}"> <br>
19  StudentID:
20      <input type = "text" name = "StudentID" value = "${StudentID}" readonly> <br>
21      <input type = "submit" value = "change">
22  </form>
23  <form action = "SearchStudentDatabase">
24      <input type = "hidden" name = "searchValue" value = "${searchValue}">
25      <input type = "hidden" name = "searchBy" value = "${searchBy}">
26      <input type = "submit" value = "back">
27  </form>
28  </body>
29  </html>
```

```java
package pages;

import java.io.IOException;
import java.sql.Connection;
import java.sql.PreparedStatement;
import java.sql.ResultSet;
import java.sql.Statement;
import java.text.SimpleDateFormat;

import javax.servlet.ServletException;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;

/**
 * Servlet implementation class EditStudentDatabaase
 */
public class EditStudentDatabaase extends HttpServlet {
    private static final long serialVersionUID = 1L;

    /**
     * @see HttpServlet#HttpServlet()
     */
    public EditStudentDatabaase() {
        super();
        // TODO Auto-generated constructor stub
    }

    /**
     * @see HttpServlet#doGet(HttpServletRequest request, HttpServletResponse response)
     */
    protected void doGet(HttpServletRequest request, HttpServletResponse response)
    throws ServletException, IOException {
        try {
            Connection conn = CreateDatabase.connect();
            PreparedStatement pstat = conn.prepareStatement("SELECT*FROM
            Student_Details WHERE StudentID = ?;");
            int StudentID = Integer.parseInt(request.getParameter("StudentID"));
            String searchBy = request.getParameter("searchBy");
            String searchValue = request.getParameter("searchValue");
            pstat.setInt(1, StudentID);
            ResultSet rs = pstat.executeQuery();
            String fname = rs.getString("FirstName");
            String lname = rs.getString("LastName");
            String Class = rs.getString("Class");
            Long initialDate = rs.getLong("DOB");
            SimpleDateFormat sdf = new java.text.SimpleDateFormat("dd/MM/yyyy");
            String date = sdf.format(initialDate * 1000);
            request.setAttribute("StudentID", StudentID);
            request.setAttribute("fname", fname);
            request.setAttribute("lname", lname);
            request.setAttribute("Class", Class);
            request.setAttribute("date", date);
            request.setAttribute("searchValue", searchValue);
            request.setAttribute("searchBy", searchBy);
            request.getRequestDispatcher("EditStudent.jsp").forward(request, response);
        }
        catch (Exception e) {
            e.printStackTrace();
        }
    }

    /**
     * @see HttpServlet#doPost(HttpServletRequest request, HttpServletResponse response)
     */
    protected void doPost(HttpServletRequest request, HttpServletResponse response)
    throws ServletException, IOException {
        try {
            Connection conn = CreateDatabase.connect();
```

```
67          PreparedStatement pstat = conn.prepareStatement("UPDATE Student_Details SET
            FirstName = ?, LastName = ?, DOB = ?, Class = ? WHERE StudentID = ?;");
68          pstat.setString(1, request.getParameter("fname"));
69          pstat.setString(2, request.getParameter("lname"));
70          Long date = (new
            SimpleDateFormat("ddMMyyyy").parse(request.getParameter("date").replaceAll("/
            ", "")).getTime()) / 1000;
71          pstat.setLong(3, date);
72          pstat.setString(4, request.getParameter("Class"));
73          pstat.setInt(5, Integer.parseInt(request.getParameter("StudentID")));
74          pstat.execute();
75      }
76      catch(Exception e) {
77          e.printStackTrace();
78      }
79      doGet(request, response);
80  }
81
82 }
83
```

```jsp
<%@ page language="java" contentType="text/html; charset=ISO-8859-1"
    pageEncoding="ISO-8859-1"%>
<!DOCTYPE html>
<html>
<head>
<meta charset="ISO-8859-1">
<title>Student Database</title>
</head>
<body>
<h2>Student Database</h2>
<form action = "AddStudent.jsp" >
    <input type = "submit" value = "Add Student">
</form>
<form action = "SearchStudent.jsp" >
    <input type = "submit" value = "Search Students">
</form>
<form action="PreAttendance.jsp">
    <input type = "submit" value = "Mark Attendace">
</form>
<form action="CheckAttendance.jsp">
    <input type = "submit" value = "Check Attendace">
</form>
<form action = "TestSelect.jsp">
    <input type = "submit" value = "Tests">
</form>
<form action = "LeaderboardDatabase">
    <input type = "submit" value = "LeaderBoard">
</form>
</body>
</html>
```

```jsp
1   <%@ page language="java" contentType="text/html; charset=ISO-8859-1"
2       pageEncoding="ISO-8859-1"%>
3        <%@ taglib prefix="c" uri="http://java.sun.com/jsp/jstl/core" %>
4   <!DOCTYPE html>
5   <html>
6   <head>
7   <meta charset="ISO-8859-1">
8   <title>Leaderboard</title>
9   </head>
10  <body>
11  <form action = "index.jsp" >
12      <input type = "submit" value = "Back">
13  </form>
14  <table style="width:100%">
15  <tr>
16      <th>Student ID</th>
17      <th>Name</th>
18      <th>Average</th>
19      <th>Completed</th>
20  </tr>
21  <c:forEach items="${Rows}" var="row">
22          ${row}
23      </c:forEach>
24  </table>
25  </body>
26  </html>
```

```java
1    package pages;
2
3    import java.io.IOException;
4    import java.sql.Connection;
5    import java.sql.ResultSet;
6    import java.sql.Statement;
7    import java.util.ArrayList;
8    import java.util.Collections;
9    import java.util.List;
10
11   import javax.servlet.ServletException;
12   import javax.servlet.http.HttpServlet;
13   import javax.servlet.http.HttpServletRequest;
14   import javax.servlet.http.HttpServletResponse;
15
16   /**
17    * Servlet implementation class LeaderboardDatabase
18    */
19   public class LeaderboardDatabase extends HttpServlet {
20       private static final long serialVersionUID = 1L;
21
22       /**
23        * @see HttpServlet#HttpServlet()
24        */
25       public LeaderboardDatabase() {
26           super();
27           // TODO Auto-generated constructor stub
28       }
29
30       /**
31        * @see HttpServlet#doGet(HttpServletRequest request, HttpServletResponse response)
32        */
33       protected void doGet(HttpServletRequest request, HttpServletResponse response)
         throws ServletException, IOException {
34           try {
35               Connection conn = CreateDatabase.connect();
36               Statement stat = conn.createStatement();
37               Statement stat2 = conn.createStatement();
38               ResultSet rs = stat.executeQuery("SELECT StudentID, FirstName, LastName
                 FROM Student_Details;");
39               int StudentID;
40               int total;
41               int completed;
42               int av;
43               String name;
44               List<String> table = new ArrayList<String>();
45               while(rs.next()) {
46                   StudentID = rs.getInt("StudentID");
47                   name = rs.getString("LastName") + " " + rs.getString("FirstName");
48                   total = 0;
49                   completed = 0;
50                   ResultSet rs2 = stat2.executeQuery("SELECT Score, CompletedOn FROM
                     Test_Record WHERE StudentID = " + StudentID + ";");
51                   while(rs2.next()) {
52                       total += rs2.getInt(1);
53                       rs2.getLong(2);
54                       if(rs2.wasNull() == false) {
55                           completed += 1;
56                       }
57                   }
58                   if (completed > 0) {
59                       av = total / completed;
60                   }
61                   else {
62                       av = 0;
63                   }
64                   table.add(av + completed + "?<tr> <td> " + StudentID + "</td> <td> " +
                     name + " </td> <td> " + av + " </td> <td> " + completed + " </td>
                     </tr>");
```

```java
                    }
                    Collections.sort(table, new AlphanumComparator());
                    List<String> Rows = new ArrayList<String>();
                    for (int i = 0; i < table.size(); i++) {
                        Rows.add(table.get(i).split("\\?")[1]);
                    }
                    Collections.reverse(Rows);
                    request.setAttribute("Rows", Rows);
                    request.getRequestDispatcher("Leaderboard.jsp").forward(request, response);
            }
            catch(Exception e) {
                e.printStackTrace();
            }
        }

        /**
         * @see HttpServlet#doPost(HttpServletRequest request, HttpServletResponse response)
         */
        protected void doPost(HttpServletRequest request, HttpServletResponse response)
        throws ServletException, IOException {
            // TODO Auto-generated method stub
            doGet(request, response);
        }

    }
```

```
1    <%@ page language="java" contentType="text/html; charset=ISO-8859-1"
2        pageEncoding="ISO-8859-1"%>
3    <!DOCTYPE html>
4    <html>
5    <head>
6    <meta charset="ISO-8859-1">
7    <title>Attendance</title>
8    </head>
9    <body>
10   <form action = "AttendanceDatabase">
11   Class:
12       <input type = "text" id = "class" name = "class"> <br>
13       <input type = "submit" value = "next">
14   </form>
15   </body>
16   </html>
```

```jsp
1    <%@ page language="java" contentType="text/html; charset=ISO-8859-1"
2        pageEncoding="ISO-8859-1"%>
3        <%@ taglib prefix="c" uri="http://java.sun.com/jsp/jstl/core" %>
4    <!DOCTYPE html>
5    <html>
6    <head>
7    <meta charset="ISO-8859-1">
8    <title>Search Students</title>
9    </head>
10   <body>
11   <form action = "SearchStudentDatabase">
12       <input type = "text" name = "searchValue" value = "${searchValue}"> <br>
13   Search by: <br>
14   StudentID
15       <input type = "radio" id = "StudentID" name = "searchBy" value = "StudentID" checked>
16   First name:
17       <input type = "radio" id = "fname" name = "searchBy" value = "fname">
18   Last name:
19       <input type = "radio" id = "lname" name = "searchBy" value = "lname"> <br>
20   All:
21       <input type = "radio" id = "all" name = "searchBy" value = "all">
22   Class:
23       <input type = "radio" id = "Class" name = "searchBy" value = "Class">
24   DOB (dd//mm/yyyy):
25       <input type = "radio" id = "DOB" name = "searchBy" value = "DOB">
26       <input type = "submit" value = "search">
27   </form>
28   <form action = "index.jsp" >
29       <input type = "submit" value = "Back">
30   </form>
31   <table style="width:100%">
32   <tr>
33       <th>Student ID</th>
34       <th>Name</th>
35       <th>Class</th>
36       <th>Manage</th>
37   </tr>
38   <c:forEach items="${Rows}" var="row">
39           ${row}
40       </c:forEach>
41   </table>
42   </body>
43   </html>
```

```java
package pages;

import java.io.IOException;
import java.sql.Connection;
import java.sql.PreparedStatement;
import java.sql.ResultSet;
import java.sql.Statement;
import java.text.SimpleDateFormat;
import java.util.ArrayList;
import java.util.List;
import java.util.stream.Collectors;

import javax.servlet.ServletException;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;

/**
 * Servlet implementation class SearchStudentDatabase
 */
public class SearchStudentDatabase extends HttpServlet {
    private static final long serialVersionUID = 1L;

    /**
     * @see HttpServlet#HttpServlet()
     */
    public SearchStudentDatabase() {
        super();
        // TODO Auto-generated constructor stub
    }

    /**
     * @see HttpServlet#doGet(HttpServletRequest request, HttpServletResponse response)
     */
    protected void doGet(HttpServletRequest request, HttpServletResponse response)
    throws ServletException, IOException {
        try {
            Connection conn = CreateDatabase.connect();
            PreparedStatement pstat;
            ResultSet rs;
            String searchBy = request.getParameter("searchBy");
            String searchValue = request.getParameter("searchValue");
            int StudentID;
            Long date;
            String name;
            String Class;
            if(searchBy.equals("StudentID")) {
                pstat = conn.prepareStatement("SELECT*FROM Student_Details WHERE
                    StudentID = ?;");
                pstat.setInt(1, Integer.parseInt(searchValue));
            }
            else if(searchBy.equals("fname")) {
                pstat = conn.prepareStatement("SELECT*FROM Student_Details WHERE
                    FirstName LIKE ?;");
                pstat.setString(1, "%" + searchValue + "%");
            }
            else if(searchBy.equals("lname")) {
                pstat = conn.prepareStatement("SELECT*FROM Student_Details WHERE
                    LastName LIKE ?;");
                pstat.setString(1, "%" + searchValue + "%");
            }
            else if(searchBy.equals("Class")) {
                pstat = conn.prepareStatement("SELECT*FROM Student_Details WHERE Class
                    LIKE ?;");
                pstat.setString(1, "%" + searchValue + "%");
            }
            else if(searchBy.equals("DOB")) {
                pstat = conn.prepareStatement("SELECT*FROM Student_Details WHERE DOB =
                    ?;");
```

```java
                    date = (new
                        SimpleDateFormat("ddMMyyyy").parse(searchValue.replaceAll("/",
                        "")).getTime()) / 1000;
                    pstat.setLong(1, date);
                }
                else {
                    pstat = conn.prepareStatement("SELECT*FROM Student_Details;");
                }
                rs = pstat.executeQuery();
                List<String> rows = new ArrayList<String>();
                while(rs.next()) {
                    StudentID = rs.getInt("StudentID");
                    date = rs.getLong("DOB");
                    Class = rs.getString("Class");
                    name = rs.getString("LastName") + " " + rs.getString("FirstName");
                    String delete = "<form action = \"SearchStudentDatabase\" method =
                        \"post\"> <input type = \"hidden\" name = \"searchBy\" value = \"" +
                        searchBy + "\"> <input type = \"hidden\" name = \"searchvalue\" value =
                        \"" + searchValue + "\"> <input type = \"hidden\" name = \"StudentID\"
                        value = \"" + StudentID + "\"> <input type = \"submit\" value =
                        \"Delete\"> </form> ";
                    String view = "<form action = \"VeiwStudentDatabase\"> <input type =
                        \"hidden\" name = \"searchBy\" value = \"" + searchBy + "\"> <input
                        type = \"hidden\" name = \"searchvalue\" value = \"" + searchValue +
                        "\"> <input type = \"hidden\" name = \"StudentID\" value = \"" +
                        StudentID + "\"> <input type = \"submit\" value = \"View\"> </form> ";
                    String edit = "<form action = \"EditStudentDatabaase\"> <input type =
                        \"hidden\" name = \"searchBy\" value = \"" + searchBy + "\"> <input
                        type = \"hidden\" name = \"searchvalue\" value = \"" + searchValue +
                        "\"> <input type = \"hidden\" name = \"StudentID\" value = \"" +
                        StudentID + "\"> <input type = \"submit\" value = \"Edit\"> </form> ";
                    String temp = name + "?<tr> <td> " + StudentID + "</td> <td> " + name +
                        " </td> <td> "  + Class + " </td> <td> " + view + edit + delete +
                        "</td> </tr>";
                    rows.add(temp);
                }
                rows = rows.stream().sorted().collect(Collectors.toList());
                List<String> Rows = new ArrayList<String>();
                for (int i = 0; i < rows.size(); i++) {
                    Rows.add(rows.get(i).split("\\?")[1]);
                }
                request.setAttribute("Rows", Rows);
                request.setAttribute("searchValue", searchValue);

            }
            catch(Exception e) {
                e.printStackTrace();
            }
            request.getRequestDispatcher("SearchStudent.jsp").forward(request, response);
    }

    /**
     * @see HttpServlet#doPost(HttpServletRequest request, HttpServletResponse response)
     */
    protected void doPost(HttpServletRequest request, HttpServletResponse response)
    throws ServletException, IOException {
        try {
            Connection conn = CreateDatabase.connect();
            Statement stat = conn.createStatement();
            int StudentID = Integer.parseInt(request.getParameter("StudentID"));
            stat.execute("DELETE FROM Student_Details WHERE StudentID = " + StudentID +
                ";");
            stat.execute("DELETE FROM Attendance_Record WHERE StudentID = " + StudentID
                + ";");
            stat.execute("DELETE FROM Test_Record WHERE StudentID = " + StudentID + ";");
        }
        catch(Exception e) {
            e.printStackTrace();
        }
```

```
113            doGet(request, response);
114        }
115
116    }
117
```

```jsp
<%@ page language="java" contentType="text/html; charset=ISO-8859-1"
    pageEncoding="ISO-8859-1"%>
<!DOCTYPE html>
<html>
<head>
<meta charset="ISO-8859-1">
<title>Add Test</title>
</head>
<body>
<form action = "AddTestNames">
Test Name:
    <input type = "text" name = "Name"> <br>
Subject:
    <input type = "text" name = "Subject"> <br>
Class (if not specific, enter all):
    <input type = "text" name = "Class" value = "all"> <br>
    <input type = "submit" value = "Enter">
</form>
<form action = "TestSelect.jsp" >
    <input type = "submit" value = "Back">
</form>
</body>
</html>
```

```jsp
<%@ page language="java" contentType="text/html; charset=ISO-8859-1"
    pageEncoding="ISO-8859-1"%>
<!DOCTYPE html>
<html>
<head>
<meta charset="ISO-8859-1">
<title>Delete Test</title>
</head>
<body>
${feedback} <br><br>
<form action = "TestDeleterDatabase" >
Test name:
    <input type = "text" name = "test"> <br>
    <input type = "submit" value = "Delete">
</form>
<form action = "TestSelect.jsp" >
    <input type = "submit" value = "Back">
</form>
</body>
</html>
```