```
1 package class22;
2
3 import uca.jetty.Container;
4
5 public class Driver {
6
7     public static void main(String[] args) {
8         Container.startServer(80);
9         Container.addHandler(new UserRegistration(), "/registration");
10        Container.addHandler(new UserLogin(), "/login");
11        Container.addHandler(new UserReportJSONBasic(), "/reportjsonbasic");
12        Container.addHandler(new UserReportJSONAdvanced(), "/reportjsonadvanced");
13        Container.addHandler(new UserReportHTMLAdvanced(), "/reporthtmladvanced");
14    } // end main
15 } // end Driver
```

```
 1 package class22;
 2
 3 import java.io.IOException;
13
14 public class UserRegistration extends HttpServlet {
15
16     private static final long serialVersionUID = 4L;
17
18     @Override
19     public void doGet(HttpServletRequest request, HttpServletResponse response) throws
   ServletException, IOException {
20         response.setContentType("text/html");
21         PrintWriter out = response.getWriter();
22         out.println("<html><head><title>Demonstration servlet</title></head><body>");
23         out.println("<form action=\"/registration\" method=\"post\">");
24         out.println("<table border=\"0\" cellpadding=\"5\">");
25         out.println("<tr><td>First Name:</td><td><input type=\"textbox\"
   name=\"fname\"></td></tr>");
26         out.println("<tr><td>Last Name:</td><td><input type=\"textbox\"
   name=\"lname\"></td></tr>");
27         out.println("<tr><td>Email:</td><td><input type=\"textbox\"
   name=\"email\"></td></tr>");
28         out.println("<tr><td colspan=\"2\"><input type=\"submit\"
   value=\"Register\"></td></tr>");
29         out.println("</table>");
30         out.println("</form>");
31         out.println("</body></html>");
32     } // end doGet
33
34     @Override
35     public void doPost(HttpServletRequest request, HttpServletResponse response) throws
   ServletException, IOException {
36         try {
37             String fname = request.getParameter("fname");
38             String lname = request.getParameter("lname");
39             String email = request.getParameter("email");
40             OracleWrapper.prepareStatement("INSERT INTO USERS (fname, lname, email) VALUES
   (?,?,?)", fname, lname, email);
41             OracleWrapper.updateDB();
42         } catch (SQLException e) {
43             System.out.println(e.getMessage());
44         } // end catch
45         response.setContentType("text/html");
46         PrintWriter out = response.getWriter();
47         out.println("<html><body><title>Registration Successful!</title>");
48         out.println("<h1>Registration Successful!</h1>");
49         out.println("</body></html>");
50     } // end doPost
51 } // end UserRegistration
```

```java
1  package class22;
2
3  import java.io.IOException;
14
15 public class UserLogin extends HttpServlet {
16
17     private static final long serialVersionUID = 4L;
18
19     @Override
20     public void doGet(HttpServletRequest request, HttpServletResponse response) throws
   ServletException, IOException {
21         response.setContentType("text/html");
22         PrintWriter out = response.getWriter();
23         out.println("<html><head><title>User Login</title></head><body>");
24         out.println("<form action=\"/login\" method=\"post\">");
25         out.println("<table border=\"0\" cellpadding=\"5\">");
26         out.println("<tr><td>Email:</td><td><input type=\"textbox\"
   name=\"email\"></td></tr>");
27         out.println("<tr><td colspan=\"2\"><input type=\"submit\" value=\"Login\"></td></tr>");
28         out.println("</table>");
29         out.println("</form>");
30         out.println("</body></html>");
31     } // end doGet
32
33     @Override
34     public void doPost(HttpServletRequest request, HttpServletResponse response) throws
   ServletException, IOException {
35         boolean login = false;
36         try {
37             String email = request.getParameter("email");
38             OracleWrapper.prepareStatement("SELECT fname, lname, email FROM USERS WHERE email =
   ?", email);
39             ResultSet rs = OracleWrapper.queryDB();
40             if (rs.next()) { // if no records were returned, then there was no match in the
   database
41                 login = true;
42             } // end if
43         } catch (SQLException e) {
44             System.out.println(e.getMessage());
45             e.printStackTrace();
46         } // end catch
47         response.setContentType("text/html");
48         PrintWriter out = response.getWriter();
49         if (login) {
50             out.println("<html><body><title>Login Successful!</title>");
51             out.println("<h1>Login Successful!</h1>");
52         } else {
53             out.println("<html><body><title>Login Unsuccessful!</title>");
54             out.println("<h1>Login Unsuccessful!</h1>");
55         } // end else
56         out.println("</body></html>");
57     } // end doPost
58 } // end UserRegistration
```

```java
 1 package class22;
 2
 3 import java.io.IOException;
14
15 public class UserReportJSONBasic extends HttpServlet {
16
17     private static final long serialVersionUID = 5L;
18
19     @Override
20     public void doGet(HttpServletRequest request, HttpServletResponse response) throws
   ServletException, IOException {
21         response.setContentType("application/json");
22         PrintWriter out = response.getWriter();
23         try {
24             OracleWrapper.prepareStatement("SELECT fname, lname, email FROM USERS");
25             ResultSet rs = OracleWrapper.queryDB();
26             out.println("{\"accounts\":[");
27             boolean hasNext = rs.next(); // needed to add comma between records
28             while (hasNext) {
29                 out.println("{\"fname\":\"" + rs.getString(1) + "\",");
30                 out.println("\"lname\":\"" + rs.getString(2) + "\",");
31                 out.println("\"email\":\"" + rs.getString(3) + "\"}");
32                 hasNext = rs.next(); // needed to add comma between records
33                 if (hasNext) { // needed to add comma between records
34                     out.print(","); // needed to add comma between records
35                 } // end if
36             } // end while
37             out.println("]}");
38         } catch (SQLException e) {
39             System.out.println(e.getMessage());
40             e.printStackTrace();
41         } // end catch
42     } // end doGet
43
44     @Override
45     public void doPost(HttpServletRequest request, HttpServletResponse response) throws
   ServletException, IOException {
46         // do nothing
47     } // end doPost
48 } // end UserReportJSONBasic
```

```java
1 package class22;
2
3 import java.io.IOException;
16
17 public class UserReportJSONAdvanced extends HttpServlet {
18
19     private static final long serialVersionUID = 6L;
20
21     @Override
22     public void doGet(HttpServletRequest request, HttpServletResponse response) throws
   ServletException, IOException {
23         response.setContentType("application/json");
24         PrintWriter out = response.getWriter();
25         try {
26             List<Account> allAccounts = new ArrayList();
27             OracleWrapper.prepareStatement("SELECT fname, lname, email FROM USERS");
28             ResultSet rs = OracleWrapper.queryDB();
29             while (rs.next()) {
30                 allAccounts.add(new Account(rs.getString(1), rs.getString(2),
   rs.getString(3)));
31             } // end while
32             out.println("{\"accounts\":[");
33             for (Account eachOne: allAccounts) {
34                 out.println(eachOne.toString());
35                 if (allAccounts.indexOf(eachOne) != allAccounts.size()-1) { // test if this is
   the last record
36                     out.print(","); // add a comma if not the last record
37                 } // end if
38             } // end for
39             out.println("]}");
40         } catch (SQLException e) {
41             System.out.println(e.getMessage());
42             e.printStackTrace();
43         } // end catch
44     } // end doGet
45
46     @Override
47     public void doPost(HttpServletRequest request, HttpServletResponse response) throws
   ServletException, IOException {
48         // do nothing
49     } // end doPost
50 } // end UserReportJSONAdvanced
```

```
1 package class22;
2
3 public class Account {
4     private final String fName;
5     private final String lName;
6     private final String email;
7
8     public Account(String incfName, String inclName, String incEmail) {
9         this.fName = incfName;
10         this.lName = inclName;
11         this.email = incEmail;
12     } // end ctor
13
14     @Override
15     public String toString() {
16         return "{\"fname\":\"" + this.fName + "\", \"lname\":\""
17                 + this.lName + "\", \"email\":\"" + this.email + "\"}";
18     } // end toString
19
20     public String toHTML() {
21         return "<tr><td>First name: </td><td>" + this.fName + "</td></tr>"
22                 + "<tr><td>Last name: </td><td>" + this.lName + "</td></tr>"
23                 + "<tr><td>Email: </td><td>" + this.email + "</td></tr>";
24     } // end toHTML
25 } // end Account
```

```java
 1 package class22;
 2
 3 import java.io.IOException;
16
17 public class UserReportHTMLAdvanced extends HttpServlet {
18
19     private static final long serialVersionUID = 7L;
20
21     @Override
22     public void doGet(HttpServletRequest request, HttpServletResponse response) throws
   ServletException, IOException {
23         response.setContentType("text/html");
24         PrintWriter out = response.getWriter();
25         try {
26             List<Account> allAccounts = new ArrayList();
27             OracleWrapper.prepareStatement("SELECT fname, lname, email FROM USERS");
28             ResultSet rs = OracleWrapper.queryDB();
29             while (rs.next()) {
30                 allAccounts.add(new Account(rs.getString(1), rs.getString(2),
   rs.getString(3)));
31             } // end while
32             out.println("<html><head><title>User Report</title></head><body>");
33             out.println("<table border=\"0\" cellpadding=\"5\">");
34             for (Account eachOne: allAccounts) {
35                 out.println(eachOne.toHTML());
36             } // end for
37             out.println("</table></body></html>");
38         } catch (SQLException e) {
39             System.out.println(e.getMessage());
40             e.printStackTrace();
41         } // end catch
42     } // end doGet
43
44     @Override
45     public void doPost(HttpServletRequest request, HttpServletResponse response) throws
   ServletException, IOException {
46         // do nothing
47     } // end doPost
48 } // end UserReportHTMLAdvanced
```