Webpage: DataOwner.jsp

Functionality: This is the login page of the Data Owner module where owner can enter username and password to login to home page. There is also a hyperlink at the bottom of the page on clicking owner can create a new account if he doesn't have one. If entered credentials are wrong this page displays error message.

```
Code:
```

```
<%@page contentType="text/html" pageEncoding="UTF-8"%><!--sets the JSP page's content type and page encoding.-->
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd"><!--declares the HTML page's document type.-->
<html xmlns="http://www.w3.org/1999/xhtml"><!--the HTML element is opened.-->
  <head><!--opens the head element-->
    <meta http-equiv="Content-Type" content="text/html; charset=utf-8" /><!--determines the HTML page's character set and
content type .-->
    <title>Secure Data Sharing Using Blockchain Technology</title><!--establishes the HTML page's title.-->
    </l></l></l></l></
    <style type="text/css">
      <!--
      .style1 {
        color: #00CC00;
        font-weight: bold;
        font-size: 16px;
     }
    </style><!--end css style block-->
  </head><!--close head element-->
  <body><!--open body element-->
    <div id="templatemo_header_wrapper"><!--open div element with id-->
      <!-- Free Web Templates by TemplateMo.com -->
      <div id="templatemo_header">
        <div id="templatemo menu">
          <div id="templatemo menu left"></div><!--add div element with id-->
          <!--open unorderd list element-->
            <a href="index.html">HOME</a><!--adds a link to the index.html page in the list item element.-->
            <a href="DataOwner.jsp" class="current">Data Owner</a><!--Adds a list item element with a reference to</li>
the current class and a link to the DataOwner.jsp page.-->
            <a href="UserLogin.jsp">Data User</a><!--a link to the UserLogin.jsp page is added as a list item</li>
element .-->
            <a href="TA.jsp">Trusted Authority</a><!--Links a list item's element to the TA.jsp page.-->
            <a href="ProxyServer.jsp">Proxy Server</a><!--establishes a link to the ProxyServer.jsp page in the list item</p>
element of the list .-->
            <a href="CSP.jsp">CSP</a><!--Inserts a list item element that links to the current class and CSP.jsp page.-->

//closes unordered list
        </div> <!-- end of menu -->
      </div> <!-- end of header -->
    </div> <!-- end of header wrapper -->
    <div id="templatemo_banner_wrapper">
      <div id="templatemo_banner">
        <div id="templatemo banner content">
          <div class="header_01">Secure Data Sharing Using Blockchain Technology</div>
        </div>
        <div class="cleaner"></div>
      </div> <!-- end of banner -->
    </div> <!-- end of banner wrapper -->
    <div id="templatemo content wrapper">
      <br />
      <img src="images/userlogin.jpg" width="300" height="300"/>
```

```
<form name="f" action="Ownerlog.jsp" method="post" onSubmit="return valid();"><!-- Actions into</pre>
ownerlog.jsp-->
                  <span style="color:#FFFFFF"><strong>Owner Login Here</strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong>
                  USERNAME:<!-- Text data tag -->
                    <input type="text" name="user" class="input1">
                  PASSWORD:
                    <input type="password" name="pass" class="input1">
                  <input type="submit" name="sub" value="Login"
id="button">              
type="reset" name="clear" value="Clear" id="button">
                           Don't Have An Account
                             <a href='OwnerRegister.jsp'>Register</a>
                           <font size="2"><b><%
                               String message = request.getParameter("message");
                               if (message != null && message.equalsIgnoreCase("fail")) {
                                 out.println("<font color='red'><blink>Invalid Username and Password</blink></font>");
                               }
                                    %></b></font>
                           </form>
                           </div> <!-- end of content wrapper -->
                           <br><br><br><br>
                                 <div id="templatemo_footer_wrapper">
                                    <div id="templatemo_footer">
                                      <div class="cleaner"></div>
                                    </div>
                                 </div> <!-- end of footer -->
                                 </html>
```

Webpage: OwnerRegister.jsp

Functionality: This is the registration page of the Data Owner module where owner can enter all the mandatory fields to create an account. There is also a hyperlink at the bottom of the page on clicking owner will be navigated to login page.

```
<!--This page is used to display whether owner registration is successful or not--> <%@page import="com.action.Queries"%> <%@page import="com.action.Dbconnection"%> <%@page import="java.sql.*"%> <!--Getting owner details to search for owner in database--> <%
```

```
int count = 0;
  String username = request.getParameter("user");
  String password = request.getParameter("pass");
  String dob = request.getParameter("dob");
  String email = request.getParameter("email");
  String gender = request.getParameter("gender");
  String address = request.getParameter("address");
  String mobile = request.getParameter("mobile");
  try {
//Setting up connection with database to insert data owner report
    Connection con = Dbconnection.getConnection();
    Statement st = con.createStatement();
    ResultSet rs = Queries.getExecuteQuery("select count(*) from owner where email="" + email + """);
    if (rs.next()) {
      count = rs.getInt(1);
      if (count == 0) {
        int i = st.executeUpdate("insert into owner values(null," + username + "'," + password + "'," + email + "'," + dob + "',"
+ address + "','" + gender + "','" + mobile + "','waiting')");
        if (i == 0) {
           //If no record is inserted, display registration failed
%>
<script type="text/javascript">
  window.alert("Owner Resiter Fail..!");
  window.location = "OwnerRegister.jsp";
</script>
<%
} else {
//If a record is inserted, display registration successful
<script type="text/javascript">
  window.alert("New Owner Register Success..!");
  window.location = "OwnerRegister.jsp";
</script>
<%
 }
} else {
//If the owner is a duplicate display owner is already exists
<script type="text/javascript">
  window.alert("Onwer Alredy Exist For This User ID...");
  window.location = "OwnerRegister.jsp";
</script>
<%
    }
  } catch (Exception e) {
    out.println(e);
  }
%>
```

Webpage: UserLogin.jsp

Functionality: This is the login page of the Data User module where users can enter username and password to login to home page. There is also a hyperlink at the bottom of the page on clicking User can create a new account if he doesn't have one. If entered credentials are wrong this page displays error message.

```
<%@page contentType="text/html" pageEncoding="UTF-8"%>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
```

```
<html xmlns="http://www.w3.org/1999/xhtml">
  <head>
   <meta http-equiv="Content-Type" content="text/html; charset=utf-8" />
   <title>Secure Data Sharing Using Blockchain Technology</title>
   <link href="templatemo_style.css" rel="stylesheet" type="text/css" />
   <style type="text/css">
     <!--
     .style1 {
       color: #00CC00;
       font-weight: bold;
       font-size: 16px;
     }
   </style>
 </head>
  <body>
   <div id="templatemo header wrapper">
     <!-- Free Web Templates by TemplateMo.com -->
     <div id="templatemo_header">
       <div id="templatemo_menu">
         <div id="templatemo_menu_left"></div>
          <!-- Navigation Menu -->
          <a href="index.html">HOME</a>
          <a href="DataOwner.jsp">Data Owner</a>
          <a href="UserLogin.jsp" class="current">Data User</a>
          <a href="TA.jsp">Trusted Authority</a>
          <a href="ProxyServer.jsp">Proxy Server</a>
          <a href="CSP.jsp">CSP</a>
         </div> <!-- end of menu -->
     </div> <!-- end of header -->
   </div> <!-- end of header wrapper -->
   <div id="templatemo_banner_wrapper">
     <div id="templatemo banner">
       <div id="templatemo_banner_content">
         <!-- Banner Content -->
         <div class="header_01">Secure Data Sharing Using Blockchain Technology</div>
       </div>
       <div class="cleaner"></div>
     </div> <!-- end of banner -->
   </div> <!-- end of banner wrapper -->
   <div id="templatemo_content_wrapper">
     <br />
     <!-- Image column -->
         <img src="images/userlogin.jpg" width="300" height="300"/>
         <!-- Login form column -->
         >
          <!-- User login form -->
            <form name="f" action="Userlog.jsp" method="post" onSubmit="return valid();">
              <!-- Form header -->
                <span style="color:#FFFFFF"><strong>User Login Here</strong><strong></strong></span>
```

```
<!-- Username input field -->
             USERNAME:
             <input type="text" name="user" class="input1">
            <!-- Password input field -->
             PASSWORD:
             <input type="password" name="pass" class="input1">
            >
               <!-- Submit and reset buttons -->
               <input type="submit" name="sub" value="Login" id="button">
           
                <input type="reset" name="clear" value="Clear" id="button">
                  <!-- Registration link -->
                     Don't Have An Account
                     <a href='Register.jsp'>Register</a>
                   <!-- Display error message on login failure -->
                     <font size="2"><b>
                        <%
                         String message = request.getParameter("message");
                         if (message != null && message.equalsIgnoreCase("fail")) {
                           out.println("<font color='red'><blink>Invalid Username and Password</blink></font>");
                        %>
                      </b></font>
                   </form>
                  </div> <!-- end of content wrapper -->
                  <br><br><br><br>
                      <div id="templatemo_footer_wrapper">
                        <div id="templatemo footer">
                         <div class="cleaner"></div>
                        </div>
                      </div> <!-- end of footer -->
                      </body>
                      </html>
```

Webpage: Register.jsp

Functionality: This is the registration page of the Data User module where users can enter all the mandatory fields to create an account. There is also a hyperlink at the bottom of the page on clicking user will be navigated to login page.

Code:

<!--This page is used to allow users to register in data user module by giving their details-->

```
<%@page contentType="text/html" pageEncoding="UTF-8"%>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<a href="http://www.w3.org/1999/xhtml">
  <head>
   <meta http-equiv="Content-Type" content="text/html; charset=utf-8" />
   <title>Secure Data Sharing Using Blockchain Technology</title>
   <link href="templatemo_style.css" rel="stylesheet" type="text/css" />
   <!--Style element is used to style the title of the project-->
   <style type="text/css">
     <!--
     .style1 {
       color: #00CC00;
       font-weight: bold;
       font-size: 16px;
   </style>
 </head>
 <body>
   <div id="templatemo_header_wrapper">
     <!-- The below block is used to display other tabs so that user can navigate -->
     <div id="templatemo header">
       <div id="templatemo menu">
         <div id="templatemo_menu_left"></div>
           <a href="index.html">HOME</a>
           <a href="DataOwner.jsp">Data Owner</a>
           <a href="UserLogin.jsp" class="current">Data User</a>
           <a href="TA.jsp">Trusted Authority</a>
           <a href="ProxyServer.jsp">Proxy Server</a>
           <a href="CSP.jsp">CSP</a>
         </div> <!-- end of menu -->
     </div> <!-- end of header -->
   </div> <!-- end of header wrapper -->
   <!--This block is used to display the title of the project-->
   <div id="templatemo_banner_wrapper">
     <div id="templatemo_banner">
       <div id="templatemo_banner_content">
         <div class="header 01">Secure Data Sharing Using Blockchain Technology</div>
       </div>
       <div class="cleaner"></div>
     </div> <!-- end of banner -->
   </div> <!-- end of banner wrapper -->
   <div id="templatemo_content_wrapper">
     <br />
     <!-- To ask for user details like username, password, dob for registration -->
         <img src="images/register.jpg" width="400" height="300"/>
         <form name="f" action="UserReg.jsp" method="post" onSubmit="return valid();">
                <span
style="color:#FFFFFF"><strong>User Register Here</strong></strong></strong></strong>
```

```
USERNAME:
            <input type="text" name="user" class="input1" required>
          PASSWORD:
            <input type="password" name="pass" class="input1" minlength="8" required>
          Date Of Birth
            <input type="date" name="dob" class="input1" required>
          Email Id
            <input type="text" name="email" class="input1" required>
            Gender
            <select name="gender" >
              <option value="Male">Male</option>
              <option value="FeMale">FeMale</option>
              <option value="Others">Others
             </select>
          Address
            <input type="text" name="address" class="input1" required>
          Mobile Number
            <input type="text" name="mobile" class="input1" required>
          <input type="submit" name="sub" value="Submit"
id="button">              
type="reset" name="clear" value="Clear" id="button">
                <!-- To display hyperlink to login page so that user can login if he already have an account-->
                  Already Have An Account
                  <a href='UserLogin.jsp'>Login</a>
                 <!-- If login credentials are wrong display invalid credentials-->
                 <font size="2"><b><%
    String message = request.getParameter("message");
    if (message != null && message.equalsIgnoreCase("fail")) {
     out.println("<font color='red'><blink>Invalid Username and Password</blink></font>");
    }
                     %></b></font>
                </form>
```

```
</div> <!-- end of content wrapper --> </html>
```

Webpage: OwnerHome.jsp

Functionality: This is the home page of the Data Owner module where a welcome message will be displayed and there are 4 tabs namely Home, Upload Files, View Files and Logout. On clicking them, Owner will be navigated to Home, upload files, view files and login pages respectively.

```
<!--This page is used to allow users to register in data user module by giving their details-->
<%@page contentType="text/html" pageEncoding="UTF-8"%>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
  <head>
    <meta http-equiv="Content-Type" content="text/html; charset=utf-8" />
    <title>Secure Data Sharing Using Blockchain Technology</title>
    <link href="templatemo_style.css" rel="stylesheet" type="text/css" />
    <!--Style element is used to style the title of the project-->
    <style type="text/css">
      <!--
      .style1 {
        color: #00CC00;
        font-weight: bold;
        font-size: 16px;
      }
      -->
    </style>
  </head>
  <body>
    <div id="templatemo header wrapper">
      <!-- The below block is used to display other tabs so that user can navigate -->
      <div id="templatemo_header">
        <div id="templatemo_menu">
          <div id="templatemo_menu_left"></div>
          <a href="index.html">HOME</a>
            <a href="DataOwner.jsp">Data Owner</a>
            <a href="UserLogin.jsp" class="current">Data User</a>
            <a href="TA.jsp">Trusted Authority</a>
            <a href="ProxyServer.jsp">Proxy Server</a>
            <a href="CSP.jsp">CSP</a>
          </div> <!-- end of menu -->
      </div> <!-- end of header -->
    </div> <!-- end of header wrapper -->
    <!--This block is used to display the title of the project-->
    <div id="templatemo banner wrapper">
      <div id="templatemo banner">
        <div id="templatemo_banner_content">
          <div class="header_01">Secure Data Sharing Using Blockchain Technology</div>
        </div>
        <div class="cleaner"></div>
      </div> <!-- end of banner -->
    </div> <!-- end of banner wrapper -->
    <div id="templatemo_content_wrapper">
      <br />
```

```
<!-- To ask for user details like username, password, dob for registration -->
      <img src="images/register.jpg" width="400" height="300"/>
      >
       <form name="f" action="UserReg.jsp" method="post" onSubmit="return valid();">
          <span
style="color:#FFFFFF"><strong>User Register Here</strong></strong></strong></strong>
          USERNAME:
           <input type="text" name="user" class="input1" required>
          PASSWORD:
           <input type="password" name="pass" class="input1" minlength="8" required>
          Date Of Birth
           <input type="date" name="dob" class="input1" required>
          Email Id
           <input type="text" name="email" class="input1" required>
          Gender
           <select name="gender" >
              <option value="Male">Male</option>
              <option value="FeMale">FeMale
              <option value="Others">Others
            </select>
          Address
           <input type="text" name="address" class="input1" required>
          Mobile Number
           <input type="text" name="mobile" class="input1" required>
          <input type="submit" name="sub" value="Submit"
id="button">              
type="reset" name="clear" value="Clear" id="button">
               <!-- To display hyperlink to login page so that user can login if he already have an account-->
               Already Have An Account
                  <a href='UserLogin.jsp'>Login</a>
                <!-- If login credentials are wrong display invalid credentials-->
                <font size="2"><b><%
                  String message = request.getParameter("message");
                  if (message != null && message.equalsIgnoreCase("fail")) {
```

```
out.println("<font color='red'><blink>Invalid Username and Password</blink></font>");
}
%></b></font>

</di>

</div> <!-- end of content wrapper -->
</html>
```

Webpage: Upload.jsp

Functionality: This page is accommodated in Data Owner module, where a owner can upload a text file to database by selecting a file and giving a name and owner can also check the contents of the file in this page. A unique key will be generated for every file.

```
<!-- This code is used to display upload files page in data owner module -->
<%@page import="com.sun.org.apache.xerces.internal.impl.dv.util.Base64"%>
<%@page import="javax.crypto.SecretKey"%>
<%@page import="javax.crypto.KeyGenerator"%>
<@page import="java.util.Random"%>
<@page contentType="text/html" pageEncoding="UTF-8"%>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<a href="http://www.w3.org/1999/xhtml">
  <head>
    <meta http-equiv="Content-Type" content="text/html; charset=utf-8" />
    <title>Secure Data Sharing Using Blockchain Technology</title>
    <link href="templatemo_style.css" rel="stylesheet" type="text/css" />
    <!--style element used for styling the title of the project-->
    <style type="text/css">
      <!--
      .style1 {
        color: #00CC00;
        font-weight: bold;
        font-size: 16px;
      }
    </style>
  </head>
  <body>
    <!-- This part displays menu used to navigate to other tabs from Upload Files tab -->
    <div id="templatemo_header_wrapper">
      <div id="templatemo_header">
        <div id="templatemo_menu">
          <div id="templatemo menu left"></div>
            <a href="OwnerHome.jsp">HOME</a>
            <a href="Upload.jsp" class="current">Upload</a>
            <a href="DO_ViewFiles.jsp">View Files</a>
            <a href="DataOwner.jsp">logout</a>
          </div> <!-- end of menu -->
      </div> <!-- end of header -->
    </div>
    <div id="templatemo_content_wrapper">
      <br />
```

```
<!--getting logged in owner detail using session storage-->
    <%String username = (String) session.getAttribute("username");</pre>
     String mskey = (String) session.getAttribute("mskey");
     String email = (String) session.getAttribute("email");
     String id = (String) session.getAttribute("id");
 //Using a key generator to create unique key for every file upload
     KeyGenerator keygen = KeyGenerator.getInstance("AES");
     keygen.init(128);
     SecretKey s = keygen.generateKey();
     //converting secret keyto string
     byte[] b = s.getEncoded();//encoding secret key
     String skey = Base64.encode(b);
    <!--This block is used to display a table to take input file details-->
    <img src="images/fileupload.jpg" width="300" height="300"/>
       <form name="f2" action="Upload2.jsp" method="post" style="margin-right: 50px">
           <span style="color:#FFFFFF"><strong> File Upload Here</strong><strong></strong></strong>
           Random Number
             <input type="text" name="number" value="<%=skey%>" class="input1" readonly>
           Choose File
             <input type="file" id="file" name="file" onchange="loadFileAsText()" class="input1" required>
           FileName
             <input type="text" name="fname" placeholder="filename.txt" class="input1" required/>
           File Data
             <label>
                <textarea name="data" id="textarea" cols="50" rows="10"></textarea>
              </label>
           About File
                <textarea name="metadata" cols="50" rows="5" placeholder="Write somethig about file"
required></textarea>
              </label>
           <input type="submit" name="sub" value="Upload"
id="button">             
type="reset" name="clear" value="Clear" id="button">
                 <font size="2"><b><%
```

```
String message = request.getParameter("message");
      if (message != null && message.equalsIgnoreCase("fail")) {
        out.println("<font color='red'><blink>Invalid Username and Password</blink></font>");
                                 %></b></font>
                         </form>
                         <!--To display the file contents in text area element so that user can view it before uploading using
file reader API-->
                         <script type='text/javascript'>
                           function loadFileAsText()
                             var fileToLoad = document.getElementById("file").files[0];
                             var fileReader = new FileReader();
                             fileReader.onload = function (fileLoadedEvent)
                               //var filename = fileToLoad.files.item[0].name;
                               var textFromFileLoaded = fileLoadedEvent.target.result;
                               document.getElementById("textarea").value = textFromFileLoaded;
                             fileReader.readAsText(fileToLoad, "UTF-8");
                         </script>
                         </html>
```

Webpage: DO_ViewFiles.jsp

Functionality: This page is accommodated in Data Owner module, where a owner can see all the files he uploaded in database in a tabular format along with contents of the file and date uploaded.

```
<!-- This code is used to display files uploaded by owner in data owner module -->
<%@page import="com.sun.org.apache.xerces.internal.impl.dv.util.Base64"%>
<@page import="javax.crypto.SecretKey"%>
<%@page import="javax.crypto.KeyGenerator"%>
<@page import="java.util.Random"%>
<%@page contentType="text/html" pageEncoding="UTF-8"%>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
  <head>
    <meta http-equiv="Content-Type" content="text/html; charset=utf-8" />
    <title>Secure Data Sharing Using Blockchain Technology</title>
    <link href="templatemo style.css" rel="stylesheet" type="text/css" />
    <!--style element used for styling the title of the project-->
    <style type="text/css">
      <!--
      .style1 {
        color: #00CC00;
        font-weight: bold;
        font-size: 16px;
      }
    </style>
  </head>
```

```
<body>
 <div id="templatemo header wrapper">
   <!-- This part displays menu used to navigate to other tabs from Upload Files tab -->
   <div id="templatemo header">
     <div id="templatemo_menu">
       <div id="templatemo_menu_left"></div>
       <a href="OwnerHome.jsp">HOME</a>
         <a href="Upload.jsp">Upload</a>
         <a href="DO ViewFiles.jsp" class="current">View Files</a>
         <a href="DataOwner.jsp">logout</a>
       </div> <!-- end of menu -->
   </div> <!-- end of header -->
 </div>
 <div id="templatemo content wrapper">
   <br />
   <!--getting logged in owner detail using session storage-->
   <%String username = (String) session.getAttribute("username");</pre>
     String mskey = (String) session.getAttribute("mskey");
     String email = (String) session.getAttribute("email");
     String id = (String) session.getAttribute("id");
   %>
   <center>
     <h3>View All Uploaded Files</h3>
     <!--table to display the file name, content and date-->
     <@page import="com.action.Queries"%>
       <@page import="java.sql.ResultSet"%>
       <center>
         FileName File Data Date
           <%try {
               ResultSet r = Queries.getExecuteQuery("select * from file where owner="" + id + """);
               while (r.next()) {
           %>
           <%=r.getString("filename")%>
             <textarea cols="50" rows="10"><%=r.getString("filedata")%></textarea>
             <%=r.getString("date")%>
           <%
               }
             } catch (Exception e) {
               System.out.println(e);
             }%>
         </center>
       <script type='text/javascript'>
         function loadFileAsText()
           var fileToLoad = document.getElementById("file").files[0];
           var fileReader = new FileReader();
           fileReader.onload = function (fileLoadedEvent)
             //var filename = fileToLoad.files.item[0].name;
```

```
var textFromFileLoaded = fileLoadedEvent.target.result;
      document.getElementById("textarea").value = textFromFileLoaded;
    };
    fileReader.readAsText(fileToLoad, "UTF-8");
</script>
</html>
```

</div>

<div class="cleaner"></div>

Functionality: This is the home page of the Data User module where a welcome message will be displayed and there are 4 tabs namely Home, Search Files & download and Logout. On clicking them, User will be navigated to Home, Search files & download

```
Webpage: UserHome.jsp
and logout pages respectively.
Code:
<%@page contentType="text/html" pageEncoding="UTF-8"%> <!--This Import statement sets the character encoding to UTF-8</p>
and the content type to text/html-->
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml"> <!-- This Statement indicates the code as being composed in the XHTML 1.0</p>
Transitional namespace to the browser-->
  <head>
    <meta http-equiv="Content-Type" content="text/html; charset=utf-8" /> <!-- this statment specifies the encoding and type
of the document for web browsers-->
    <ti><ti><ti><ti><erup Data Sharing Using Blockchain Technology</title><!-- we are listing project title using title tag.--></title><!-- we are listing project title using title tag.--></ti>
    k href="templatemo_style.css" rel="stylesheet" type="text/css" /> <!--here in this we are referring</pre>
templatemo_style.css class-->
    <!-- The browser is informed that the code is CSS code by the type="text/css" property -->
    <style type="text/css">
      <!--
      .style1 {
        color: #00CC00;
        font-weight: bold;
        font-size: 16px;
      }
    </style>
  </head>
  <!--start of body tag which contains visible content of webpage-->
  <body>
    <div id="templatemo_header_wrapper">
      <!-- Free Web Templates by TemplateMo.com -->
      <div id="templatemo header">
        <div id="templatemo menu">
           <div id="templatemo_menu_left"></div>
             <a href="UserHome.jsp" class="current">Home</a>
             <a href="SearchFile.jsp">Search File</a>
             <a href="UserLogin.jsp">LogOut</a>
           </div> <!-- end of menu -->
      </div> <!-- end of header -->
    </div> <!-- end of header wrapper -->
    <div id="templatemo banner wrapper"> <!-- start of templatemo banner wrapper-->
      <div id="templatemo banner">
        <div id="templatemo_banner_content">
```

<div class="header_01">Secure Data Sharing Using Blockchain Technology</div>

```
</div> <!-- end of banner -->
</div> <!-- end of banner wrapper -->
<div id="templatemo_content_wrapper">
 <br />
 <!--Retrieve the session's ID, email, mskey, and username.-->
       <%String username = (String) session.getAttribute("username");</pre>
         String mskey = (String) session.getAttribute("mskey");
         String email = (String) session.getAttribute("email");
         String id = (String) session.getAttribute("id");
       <!--prints welcome with username.-->
       <h2>Welcome: <%=username%></h2>
     </div> <!-- end of content wrapper -->
<br><br><br>>
     <div id="templatemo footer wrapper">
       <div id="templatemo footer">
         <div class="cleaner"></div>
       </div>
     </div> <!-- end of footer -->
     </html>
```

Webpage: SearchFile.jsp

font-size: 16px;

Functionality: This page is accommodated in Data User module, where a user can search for the files that are uploaded to database by Data Owner. On searching with a file name, files will be retrieved from database and displayed in a tabular format. Code:

```
<!--Import Statements-->
<!--author-anjan-->
<%@page import="java.sql.ResultSet"%> <!--This import statement calls ResultSet class which contains methods which helps to</pre>
set,get data from ResultSet and update data within ResultSet -->
<%@page import="com.action.Queries"%> <!--This import statement calls a custom class which has methods for running SQL</pre>
queries on a database-->
<%@page contentType="text/html" pageEncoding="UTF-8"%> <!--This Import statement sets the character encoding to UTF-8
and the content type to text/html-->
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml"> <!-- This Statement indicates the code as being composed in the XHTML 1.0</p>
Transitional namespace to the browser-->
  <head> <!-- Start of Head Tag-->
    <meta http-equiv="Content-Type" content="text/html; charset=utf-8" /> <!-- this statment specifies the encoding and type
of the document for web browsers-->
    k href="templatemo_style.css" rel="stylesheet" type="text/css" /> <!--here in this we are referring</pre>
templatemo_style.css class-->
    <!-- The browser is informed that the code is CSS code by the type="text/css" property -->
    <style type="text/css">
      <!--
      .style1 {
        color: #00CC00;
        font-weight: bold;
```

```
-->
    </style>
  </head>
  <!--start of body tag which contains visible content of webpage-->
  <body>
    <div id="templatemo_header_wrapper">
      <!-- Free Web Templates by TemplateMo.com -->
      <div id="templatemo_header">
        <div id="templatemo menu">
         <div id="templatemo_menu_left"></div>
         <a href="UserHome.jsp">Home</a>
           <a href="SearchFile.jsp" class="current">Search File</a>
           <a href="UserLogin.jsp">LogOut</a>
        </div> <!-- end of menu -->
      </div> <!-- end of header -->
    </div> <!-- end of header wrapper -->
    <div id="templatemo_banner_wrapper"> <!-- start of templatemo banner wrapper-->
      <div id="templatemo_banner">
        <div id="templatemo banner content">
         <div class="header_01">Secure Data Sharing Using Blockchain Technology</div>
        </div>
        <div class="cleaner"></div>
      </div> <!-- end of banner -->
    </div> <!-- end of banner wrapper -->
    <div id="templatemo_content_wrapper">
      <!--Retrieves the session's ID, email, mskey, and username.-->
      <%String username = (String) session.getAttribute("username");</pre>
        String mskey = (String) session.getAttribute("mskey");
        String email = (String) session.getAttribute("email");
        String id = (String) session.getAttribute("id");
      %>
      <br />
      <center>
        <!--Shows "SEARCH FILES HERE" as the heading.-->
        <h3>SEARCH FILES HERE </h3>
        <form action="SearchAction.jsp" method="post">
         <!--Enter Key-->
             Enter Key:<input type="text" name="keyword" placeholder="Enter Keyword"
required/>
            <input type="submit" value="Search" /> <input type="reset" value="Reset" />
           </form>
      </center>
    </div> <!-- end of content wrapper -->
    <div id="templatemo footer wrapper">
      <div id="templatemo footer">
        <div class="cleaner"></div>
     </div>
    </div> <!-- end of footer -->
    <body>
```

Webpage: Download.jsp

Functionality: This page is used in Data User module, where a user can download the files he searched for in SearchFile tab.

```
<%@page import="com.action.Queries"%>
<@page import="java.io.PrintWriter"%>
<%@page contentType="text/html" pageEncoding="UTF-8"%>
<%
  // Retrieves the session's ID, email, mskey, and username.
  String username = (String) session.getAttribute("username");
  String mskey = (String) session.getAttribute("mskey");
  String email = (String) session.getAttribute("email");
  String id = (String) session.getAttribute("id");
// Obtains the filename and ID by looking through the request parameters.
  String fid = request.getParameter("fid");
  String fname = request.getParameter("fname");
// Access the session attribute to obtain the data to be downloaded.
  String data = (String) session.getAttribute("data");
// To keep track of the download, adding a record to the download table.
  Queries.getExecuteUpdate("insert into download values(null,"" + id + "',"" + username + "',"" + fname + "',now())");
// Indicates that the response is an attachment by setting the Content-Disposition header.
  response.setHeader("Content-Disposition", "attachment;filename=\"" + fname + "\"");
// Sends the information to the web browser.
  out.write(data);
%>
```

Webpage: TA.jsp

Functionality: This is the login page of the Trusted Authority module where Authorized person can enter his username and password to login to home page. If Invalid credentials are entered, error message will be displayed.

```
<%@page contentType="text/html" pageEncoding="UTF-8"%>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<a href="http://www.w3.org/1999/xhtml">
  <head>
    <meta http-equiv="Content-Type" content="text/html; charset=utf-8" />
    <title>Secure Data Sharing Using Blockchain Technology</title>
    <link href="templatemo_style.css" rel="stylesheet" type="text/css" />
    <style type="text/css">
      <!--
      .style1 {
        color: #00CC00;
        font-weight: bold;
        font-size: 16px;
     }
    </style>
    <%-- Header Menu --%>
  </head>
  <body>
    <div id="templatemo_header_wrapper">
      <div id="templatemo header">
        <div id="templatemo menu">
          <div id="templatemo_menu_left"></div>
          <a href="index.html">HOME</a>
            <a href="DataOwner.jsp">Data Owner</a>
```

```
<a href="UserLogin.jsp">Data User</a>
             <a href="TA.jsp" class="current">Trusted Authority</a>
             <a href="ProxyServer.jsp">Proxy Server</a>
             <a href="CSP.jsp">CSP</a>
          </div> <!-- end of menu -->
      </div> <!-- end of header -->
    </div> <!-- end of header wrapper -->
    < --- Adding title of project --%>
    <div id="templatemo banner wrapper">
      <div id="templatemo_banner">
        <div id="templatemo_banner_content">
          <div class="header_01">Secure Data Sharing Using Blockchain Technology</div>
        </div>
        <div class="cleaner"></div>
      </div> <!-- end of banner -->
    </div> <!-- end of banner wrapper -->
    <div id="templatemo_content_wrapper">
      <br />
      <img src="images/userlogin.jpg" width="300" height="300"/>
            <%-- Form details for logging in as we do not have registration pages for CSP, TA and Proxy modules -%>
             <form name="f" action="TAlog.jsp" method="post" onSubmit="return valid();">
                 <span style="color:#FFFFFF"><strong>Trusted Authority Login</strong><strong></strong></span>
                 USERNAME:
                   <input type="text" name="user" class="input1">
                 PASSWORD:
                   <input type="password" name="pass" class="input1">
                 <input type="submit" name="sub" value="Login"
id="button">\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \&nbs
type="reset" name="clear" value="Clear" id="button">
                          < --- Fail message if form returns error--%>
                            <font size="2"><b><%
                              String message = request.getParameter("message");
                              if (message != null && message.equalsIgnoreCase("fail")) {
                                 out.println("<font color='red'><blink>Invalid Username and Password</blink></font>");
                                   %></b></font>
                          </form>
```

Webpage: ProxyServer.jsp

Functionality: This is the login page of the Proxy Server module where Proxy server person can enter his username and password to login to home page. If Invalid credentials are entered, error message will be displayed.

```
<%@page contentType="text/html" pageEncoding="UTF-8"%>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
  <head>
    <meta http-equiv="Content-Type" content="text/html; charset=utf-8" />
    <title>Secure Data Sharing Using Blockchain Technology</title>
    <link href="templatemo style.css" rel="stylesheet" type="text/css" />
    <style type="text/css">
      <!--
      .style1 {
        color: #00CC00;
        font-weight: bold;
        font-size: 16px;
      }
      -->
    </style>
  </head>
  <body>
    < --- Header Menu --%>
    <div id="templatemo header wrapper">
      <!-- Free Web Templates by TemplateMo.com -->
      <div id="templatemo_header">
        <div id="templatemo_menu">
          <div id="templatemo_menu_left"></div>
          <111>
            <a href="index.html">HOME</a>
            <a href="DataOwner.jsp">Data Owner</a>
            <a href="UserLogin.jsp">Data User</a>
            <a href="TA.jsp">Trusted Authority</a>
            <a href="ProxyServer.jsp" class="current">Proxy Server</a>
            <a href="CSP.jsp">CSP</a>
          </div> <!-- end of menu -->
      </div> <!-- end of header -->
    </div> <!-- end of header wrapper -->
    <div id="templatemo_banner_wrapper">
      <div id="templatemo_banner">
        <div id="templatemo banner content">
          <div class="header_01">Secure Data Sharing Using Blockchain Technology</div>
        </div>
        <div class="cleaner"></div>
      </div> <!-- end of banner -->
    </div> <!-- end of banner wrapper -->
```

```
<div id="templatemo_content_wrapper">
      <br />
      <img src="images/userlogin.jpg" width="300" height="300"/>
           <%-- Form details for logging in as we do not have registration pages for CSP, TA and Proxy modules --%>
             <form name="f" action="PSlog.jsp" method="post" onSubmit="return valid();">
                  <span style="color:#FFFFF"><strong>Proxy Server Login</strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong></strong>
                  USERNAME:
                    <input type="text" name="user" class="input1">
                  PASSWORD:
                    <input type="password" name="pass" class="input1">
                  <input type="submit" name="sub" value="Login"
id="button">              
type="reset" name="clear" value="Clear" id="button">
                           < --- Fail message if form returns error--%>
                             <font size="2"><b><%
                                String message = request.getParameter("message");
                                if (message != null && message.equalsIgnoreCase("fail")) {
                                  out.println("<font color='red'><blink>Invalid Username and Password</blink></font>");
                                }
                                    %></b></font>
                           </form>
                           </div> <!-- end of content wrapper -->
                           <br><br><br>>
                                  <div id="templatemo_footer_wrapper">
                                    <div id="templatemo_footer">
                                       <div class="cleaner"></div>
                                    </div>
                                  </div> <!-- end of footer -->
                                  </html>
```

Webpage: CSP.jsp

Functionality: This is the login page of the Cloud Service Provider module where a CSP can enter his username and password to login to home page. If Invalid credentials are entered, error message will be displayed.

```
Code:
```

```
<%@page contentType="text/html" pageEncoding="UTF-8"%>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
```

```
<html xmlns="http://www.w3.org/1999/xhtml">
 <head>
   <meta http-equiv="Content-Type" content="text/html; charset=utf-8" />
   <title>Secure Data Sharing Using Blockchain Technology</title>
   <link href="templatemo_style.css" rel="stylesheet" type="text/css" />
   <style type="text/css">
     <!--
     .style1 {
       color: #00CC00;
       font-weight: bold;
       font-size: 16px;
    }
   </style>
 </head>
 <body>
   <%-- Header Menu --%>
   <div id="templatemo_header_wrapper">
     <div id="templatemo_header">
       <div id="templatemo_menu">
        <div id="templatemo_menu_left"></div>
          <a href="index.html">HOME</a>
          <a href="DataOwner.jsp">Data Owner</a>
          <a href="UserLogin.jsp">Data User</a>
          <a href="TA.jsp">Trusted Authority</a>
          <a href="ProxyServer.jsp">Proxy Server</a>
          <a href="CSP.jsp" class="current">CSP</a>
        </div> <!-- end of menu -->
     </div> <!-- end of header -->
   </div> <!-- end of header wrapper -->
   <div id="templatemo_banner_wrapper">
     <div id="templatemo_banner">
       <div id="templatemo banner content">
        <div class="header_01">Secure Data Sharing Using Blockchain Technology</div>
       </div>
      <div class="cleaner"></div>
     </div> <!-- end of banner -->
   </div> <!-- end of banner wrapper -->
   <div id="templatemo content wrapper">
     <br />
     ="images/userlogin.jpg" width="300" height="300"/>
        <%-- Form details for logging in as we do not have registration pages for CSP, TA and Proxy modules --%>
          <form name="f" action="CSPlog.jsp" method="post" onSubmit="return valid();">
             <span style="color:#FFFFFF"><strong>Cloud Service Provider
Login</strong></strong>
             USERNAME:
               <input type="text" name="user" class="input1">
```

```
PASSWORD:
             <input type="password" name="pass" class="input1">
            <input type="submit" name="sub" value="Login"
id="button">              
type="reset" name="clear" value="Clear" id="button">
                  < --- Fail message if form returns error--%>
                   <font size="2"><b><%
                    String message = request.getParameter("message");
                     if (message != null && message.equalsIgnoreCase("fail")) {
                      out.println("<font color='red'><blink>Invalid Username and Password</blink></font>");
                    }
                        %></b></font>
                  </form>
                  </div> <!-- end of content wrapper -->
                  <br><br><br><br>
                      <div id="templatemo_footer_wrapper">
                        <div id="templatemo_footer">
                         <div class="cleaner"></div>
                        </div>
                      </div> <!-- end of footer -->
                      </html>
```