Course Code : **CS378**
Course Title : **Introduction to Web Development**

Lab Exercise 07 : Session Tracking

Lab Objectives:

The objective of this lab is to introduce the students to session tracking using basic and intermediate programming examples.

TASK 1: Displaying Session Information

```
The aim of this task is to use some HttpSession Methods to display some information about
the user's session.
```

Begin by doing the following:

1. Create a new Project

   File → New → Dynamic Web Project. Enter LAB_07 as the project name

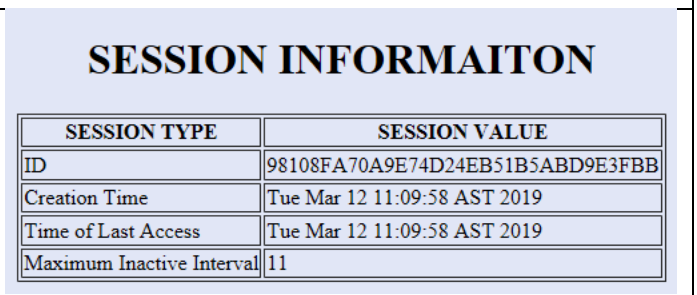
2. Create a new package called **session_Tracking.**
3. Create a new servlet called **Session_Info** in the **session_Tracking** package.
4. Open the Session_Info servlet and add the following import statements.

```
import java.io.*;
import java.util.Date;
import javax.servlet.*;
import javax.servlet.http.*;
import javax.servlet.annotation.WebServlet;
```

5. Use the following methods to display some information about the user's session.

getId()
getCreationTime()
getLastAccessedtime()
getMaxInactiveInterval()

The displayed information should be in tabular form, similar to what is shown in Figure 1. The HTML Code to create similar table is given below:



SESSION INFORMAITON

SESSION TYPE	SESSION VALUE
ID	98108FA70A9E74D24EB51B5ABD9E3FBB
Creation Time	Tue Mar 12 11:09:58 AST 2019
Time of Last Access	Tue Mar 12 11:09:58 AST 2019
Maximum Inactive Interval	11

Figure 1: Session Information

6. Using setMaxInactiveInterval(), set the maximum inactive interval to 7 seconds and then run the servlet after 3 seconds and then after 10 seconds. What did you observe? Write your comment in a notepad and submit it alongside your lab work.

TASK 2: Creating a Servlet that Shows Per-Client Access Counts

```
The aim of this exercise is to create a servlet that uses session tracking to keep per-
client access counts. Also shows other info about the session. The output should look
similar to what is shown in Figure 2 and Figure 3.
```

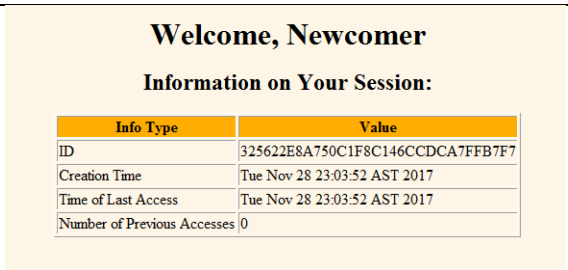


Figure 2: First figure for Task 1

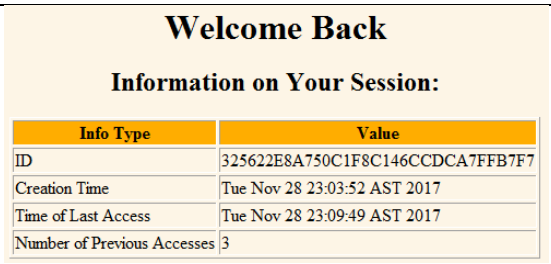


Figure 3: Second figure for Task 1

1. Create a new servlet called **SessionDetails** in the sessionTracking package.
2. Open the **SessionDetails** servlet and ensure that all the following import statements are added at the beginning of all the servlets that you will create in the lab. **Note:** For the LoginServlet and LogoutServlet, you don't have to include import java.util.Date;

```
import java.io.*;
import java.util.Date;
import javax.servlet.*;
import javax.servlet.http.*;
import javax.servlet.annotation.*;
```

3. Add the following statements in the doGet method.

```
response.setContentType("text/html");
  HttpSession session = request.getSession();
  String heading;
  Integer accessCount = (Integer)session.getAttribute("accessCount");
  if (accessCount == null) {
    accessCount = new Integer(0);
    heading = "Welcome, Newcomer";
  } else {
    heading = "Welcome Back";
    accessCount = new Integer(accessCount.intValue() + 1);
  }

  session.setAttribute("accessCount", accessCount);
  PrintWriter out = response.getWriter();
  String title = "Session Tracking Example";
  String docType =
    "<!DOCTYPE HTML PUBLIC \"-//W3C//DTD HTML 4.0 " +
    "Transitional//EN\">\n";
  out.println(docType +
    "<HTML>\n" +
    "<HEAD><TITLE>" + title + "</TITLE></HEAD>\n" +
    "<BODY BGCOLOR=\"#FDF5E6\">\n" +
    "<CENTER>\n" +
    "<H1>" + heading + "</H1>\n" +
    "<H2>Information on Your Session:</H2>\n" +
    "<TABLE BORDER=1>\n" +
    "<TR BGCOLOR=\"#FFAD00\">\n" +
    " <TH>Info Type<TH>Value\n" +
```

```
    "<TR>\n" +
    " <TD>ID\n" +
    " <TD>" + session.getId() + "\n" +
    "<TR>\n" +
    " <TD>Creation Time\n" +
    " <TD>" +
    new Date(session.getCreationTime()) + "\n" +
    "<TR>\n" +
    " <TD>Time of Last Access\n" +
    " <TD>" +
    new Date(session.getLastAccessedTime()) + "\n" +
    "<TR>\n" +
    " <TD>Number of Previous Accesses\n" +
    " <TD>" + accessCount + "\n" +
    "</TABLE>\n" +
    "</CENTER></BODY></HTML>");
```

Run the servlet then run it again (or refresh the browser) five times and observe what is displayed on the screen. Write your comment in a notepad and submit it alongside your lab work.

TASK 3: Using session.invalidate() to show how sessions are invalidated

```
Whenever session.invalidate() is called, it kills the corresponding server session and
therefore any other call on that server will throw a server error. In this task you are
required to create a login page which leads the user to a login servlet which
subsequently leads the user to a logout servlet.
```

1. Create the following files in the right locations in **LAB_07** project.

- login.html
- LoginServlet
- LogoutServlet

Note: login.html output should look similar to what is shown in Figure 4 while LoginServlet output should look similar to what is shown in Figure 5.

2. Run login.html and enter any username and password. What did you see? Write your comment in a notepad and submit it alongside your lab work.
3. Click on the Logout link. What did you see? Write your comment in a notepad and submit it alongside your lab work.

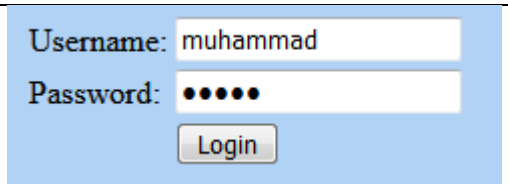


Figure 4: Login Form

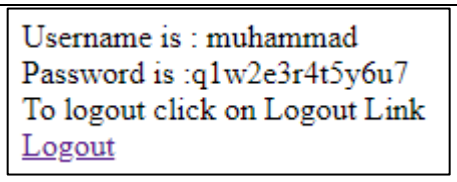


Figure 5: LoginServlet View

Task 1 Hint: Add the following code in the doGet method of your servlet

```
HttpSession session = request.getSession();
PrintWriter out = response.getWriter();
String title = "Session Tracking Example";
String heading = "SESSION INFORMAITON";

String docType =
"<!DOCTYPE HTML PUBLIC \"-//W3C//DTD HTML 4.0 " +
"Transitional//EN\">\n";

  out.println(docType +
    "<HTML>\n" +
     "<HEAD><TITLE>" + title + "</TITLE></HEAD>\n" +
                "<BODY BGCOLOR=\"#E1E6F6\">\n" +
                "<CENTER>\n" +
                "<H1>" + heading + "</H1>\n" +
                "<TABLE BORDER=1>\n" +
                  //"<TR BGCOLOR=\"#FFAD00\">\n" +
                  " <TH>SESSION TYPE<TH>SESSION VALUE\n" +
                  "<TR>\n" +
                  " <TD>ID\n" +
                  " <TD>" + session.getId() + "\n" +
                  "<TR>\n" +
                  " <TD>Creation Time\n" +
                  " <TD>" +   new Date(session.getCreationTime()) + "\n" +
                  "<TR>\n" +
                  " <TD>Time of Last Access\n" +
                  " <TD>" +  new Date(session.getLastAccessedTime()) + "\n" +
                       "<TR>\n" +
                       " <TD>Maximum Inactive Interval\n" +
                       " <TD>" +  session.getMaxInactiveInterval() + "\n" +
                "</TABLE>\n" +
    "</CENTER></BODY></HTML>");
```

Task 3 Hint (LoginServlet): Add the following code in the doGet method of your servlet

```
response.setContentType("text/html");
    String username=request.getParameter("username");
    String password=request.getParameter("password");

    HttpSession session = request.getSession();
    session.setAttribute("username", username);

    PrintWriter writer = response.getWriter();
    String message="Username is : "+ username + "<br/> Password is :" + password ;
        message = message + " <br/>To logout click on Logout Link <br/>" ;
        message = message + "<a href=\"LogoutServlet\"> Logout</a>";
        writer.println(message);
```

Task 3 Hint (LogoutServlet): Add the following code in the doGet method of your servlet

```
HttpSession session = request.getSession();
  session.invalidate();

  // try to access session object
  session.getAttribute("username");
```