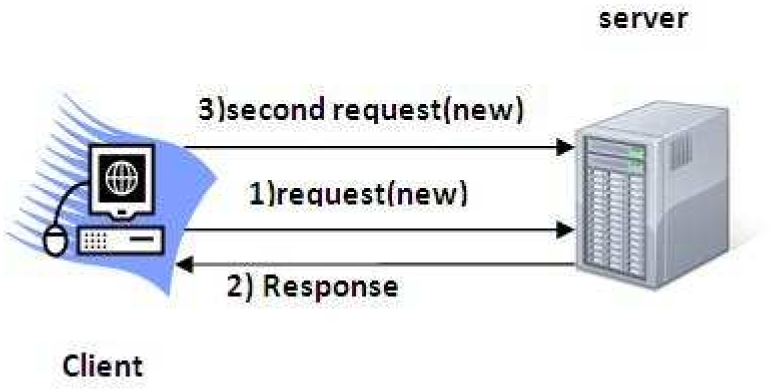
# Session Tracking

# Introduction

- **Session** simply means a particular interval of time.
- **Session Tracking** is a way to maintain state (data) of an user. It is also known as**session management** in servlet.
- Http protocol is a stateless so we need to maintain state using session tracking techniques. Each time user requests to the server, server treats the request as the new request. So we need to maintain the state of an user to recognize to particular user.
- HTTP is stateless that means each request is considered as the new request. It is shown in the figure given below:

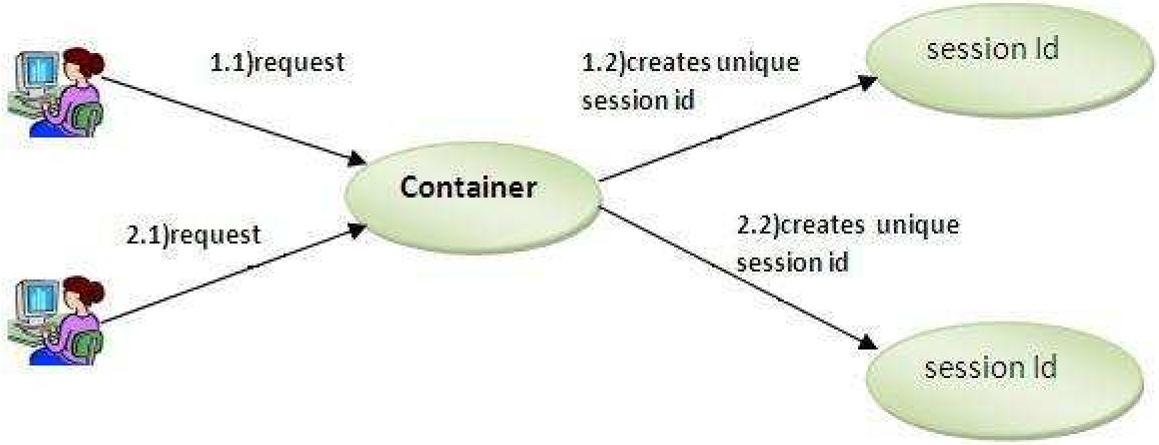


# Session Tracking Techniques

- There are four techniques used in Session tracking:
  - **Cookies**
  - **Hidden Form Field**
  - **URL Rewriting**
  - **HttpSession**

# HttpSession interface

- In such case, container creates a session id for each user. The container uses this id to identify the particular user. An object of HttpSession can be used to perform two tasks:
  - bind objects
  - view and manipulate information about a session, such as the session identifier, creation time, and last accessed time.



# Get the HttpSession object

- The HttpServletRequest interface provides two methods to get the object of HttpSession:
  - **public HttpSession getSession():**Returns the current session associated with this request, or if the request does not have a session, creates one.
  - **public HttpSession getSession(boolean create):**Returns the current HttpSession associated with this request or, if there is no current session and create is true, returns a new session.

# Commonly used methods of HttpSession interface

- **public String getId():**Returns a string containing the unique identifier value.
- **public long getCreationTime():**Returns the time when this session was created, measured in milliseconds since midnight January 1, 1970 GMT.
- **public long getLastAccessedTime():**Returns the last time the client sent a request associated with this session, as the number of milliseconds since midnight January 1, 1970 GMT.
- **public void invalidate():**Invalidates this session then unbinds any objects bound to it.

# Example

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

// Extend HttpServlet class
public class SessionTrack extends HttpServlet {

 public void doGet(HttpServletRequest request,
          HttpServletResponse response)
      throws ServletException, IOException
 {
  String n1=request.getParameter("uname");
   // Create a session object if it is already not  created.
   HttpSession session = request.getSession(true);
   // Get session creation time.
   Date createTime = new Date(session.getCreationTime());
   // Get last access time of this web page.
   Date lastAccessTime =
            new Date(session.getLastAccessedTime());
```

# Cont...

```
String title = "Welcome Back to my website";
    Integer visitCount = new Integer(0);
    String visitCountKey = new String("visitCount");
    String userIDKey = new String("userID");
    String userID = new String("ABCD");

    // Check if this is new comer on your web page.
    if (session.isNew()){
      title = "Welcome to my website";
      session.setAttribute(userIDKey, userID);
    } else {
      visitCount = (Integer)session.getAttribute(visitCountKey);
      visitCount = visitCount + 1;
      userID = (String)session.getAttribute(userIDKey);
    }
    session.setAttribute(visitCountKey,  visitCount);

    // Set response content type
    response.setContentType("text/html");
    PrintWriter out = response.getWriter();
```

# Cont...

```
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=\"#f0f0f0\">\n" +
        "<h1 align=\"center\">" + title + "</h1>\n" +
        "<h1 align=\"center\">" + n1 + "</h1>\n" +
         "<h2 align=\"center\">Session Infomation</h2>\n" +
        "<table border=\"1\" align=\"center\">\n" +
        "<tr bgcolor=\"#949494\">\n" +
        "  <th>Session info</th><th>value</th></tr>\n" +
        "<tr>\n" +
        "  <td>id</td>\n" +
        "  <td>" + session.getId() + "</td></tr>\n" +
        "<tr>\n" +
        "  <td>Creation Time</td>\n" +
        "  <td>" + createTime +
        "  </td></tr>\n" +
        "<tr>\n" +
        "  <td>Time of Last Access</td>\n" +
        "  <td>" + lastAccessTime +
        "  </td></tr>\n" +
        "<tr>\n" +
        "  <td>User ID</td>\n" +
        "  <td>" + userID +
        "  </td></tr>\n" +
        "<tr>\n" +
        "  <td>Number of visits</td>\n" +
        "  <td>" + visitCount + "</td></tr>\n" +
        "</table>\n" +
        "</body></html>");
 }
```

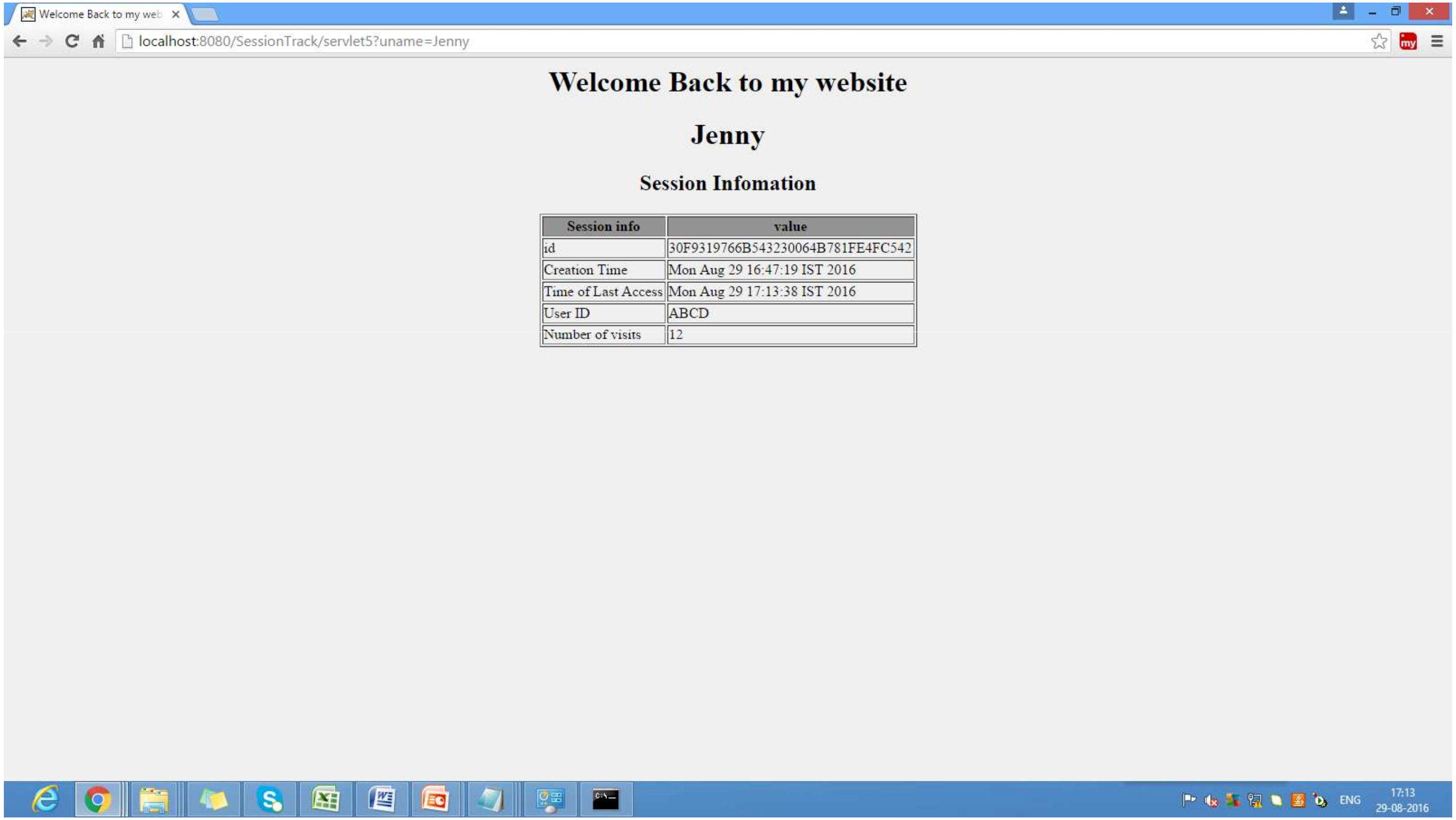
# index.html

```
<html>
    <head>
        <title>Test page</title>
    </head>
    <body>
        <form action="servlet5" method="get">
        Name: <input type="text" name="uname"><br>
        <input type="submit" value="Submit">
        </form>
    </body>
</html>
```

# web.xml

```
<web-app>
  <servlet>
    <servlet-name>SessionTrack</servlet-name>
    <servlet-class>SessionTrack</servlet-class>
  </servlet>
  <servlet-mapping>
    <servlet-name>SessionTrack</servlet-name>
    <url-pattern>/servlet5</url-pattern>
  </servlet-mapping>
</web-app>
```

# Output



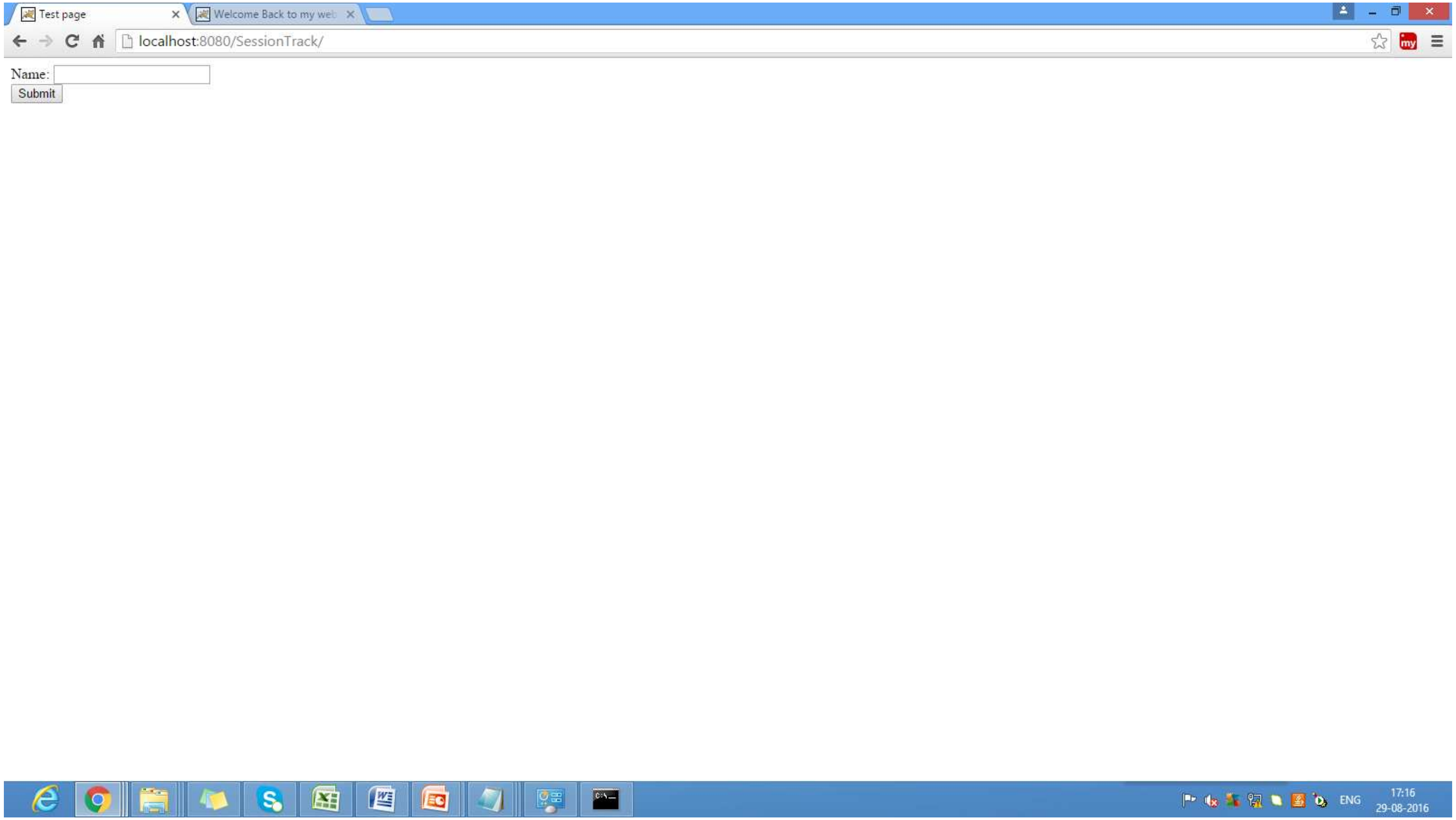
## Welcome Back to my website

## Jenny

### Session Infomation

| Session info | value |
|---|---|
| id | 30F9319766B543230064B781FE4FC542 |
| Creation Time | Mon Aug 29 16:47:19 IST 2016 |
| Time of Last Access | Mon Aug 29 17:13:38 IST 2016 |
| User ID | ABCD |
| Number of visits | 12 |

# Output



Test page
Welcome Back to my web
localhost:8080/SessionTrack/
Name:
Submit
ENG
17:16
29-08-2016