

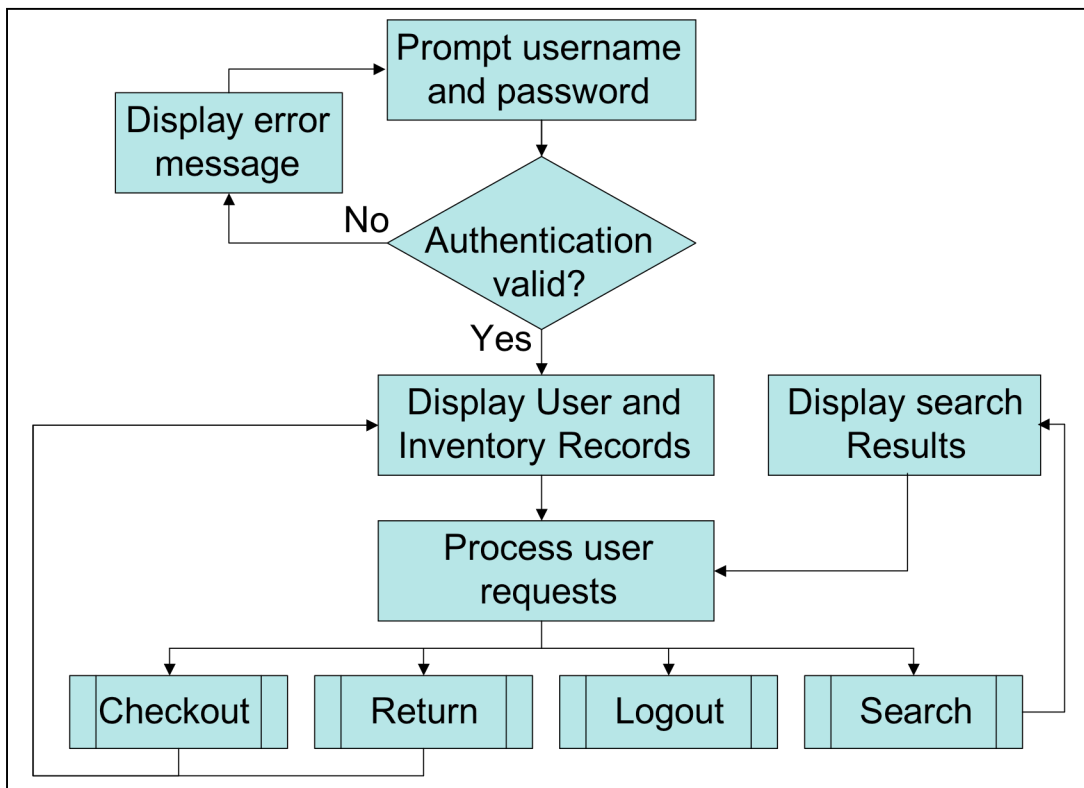
300 points. Individual Work Only. Due November 8, 2007 before class.

**1. Objective:**

Design and implement a multi-tier web application using Java Server Pages (JSP) for implementing the user and application layer and Hibernate for implementing the data layer.

**2. Description:**

Use the client/server program developed in Homework-2 to create a JSP-based user interface and create a database backend using Hibernate to store the data persistently. The functionality provided by the web application is shown in the diagram below:



When the application is deployed, you should load the database with the sample input data provided in Homework-2. Use the specific hostname and port range assigned in Homework-2 to start the web server following the instructions provided in Resources Section 10.1.

**3. Guidelines/Hints:**

First follow the instructions for setting up Apache Tomcat server provided in Resources Section 10.1 and deploy the sample application. Understand the sample application and modify it to complete this homework. You can use the demo web application provided at `~puri/cs631/homework3/demo.tar.gz`. To extract and deploy the demo application to a directory `$HOME/cs631/homework3` use the following commands on one of the Vulcan machines:

```
$ cd $HOME/cs631/homework3
$ tar xzf ~puri/cs631/homework3/demo.tar.gz
$ cd demo
$ ant install
```

Make sure that the Apache Tomcat server is running before you execute the “ant install” command. Open a browser and connect to the URL `http://hostname:port/demo`, where hostname is the hostname and port number where the Apache Tomcat server is running. You should be able to reuse most of the server-side code from Homework-2 and modify the demo web application to develop the required functionality.

**4. Graduate Students Only (Bonus for Undergraduates):**

The SEARCH protocol described above is optional for undergraduate students, but required for graduate students.

**5. Working Environment:**

You can develop and test the client and server programs on any machine that you have access to, but the final demonstration of the project must be done in the CIS Undergraduate Lab (CH 154). Hence you have to test the completed project on the CIS machines `vulcan[1-8].cis.uab.edu` (Linux workstations in the undergraduate lab) before submission. There is no need to be physically present in the lab to use these machines, you can connect to these machines remotely using an SSH Client. For more details on how to connect to these machines using SSH check out sample screen shots and a Flash demo provided at: [http://www.cis.uab.edu/cs333/CIS\\_UNIX\\_howto.html](http://www.cis.uab.edu/cs333/CIS_UNIX_howto.html).

**6. Short Answer Questions:**

1. If student A has the Apache Tomcat server program running on machine P, could student B use a browser running on machine Q to connect to A’s server program if student B knows the port on which student A’s web server is running and the URL of the service?
2. If your answer to question (1) is yes, then explain how to prevent this from happening.
3. If your answer to question (1) is no, then explain why this is not possible.
4. Since the username and password are sent to the server from the browser using HTTP as plain text, how do we make sure that the username and password is not compromised if someone is eavesdropping on the network?

**7. Feedback Questions (answer to these questions has no impact on your grade):**

Was this homework too difficult, or too easy?  
Was the assignment fun or challenging?  
Was there something that was unclear?  
Was the homework too long for the given amount of time?  
What did you learn from this homework?

**8. Submission Instructions:**

List ALL the references you used in this homework as well as test cases used to test your programs. This includes any classes that you used that you did not write and any help you received from any other sources. Use appropriate class name and include comments to indicate various operations performed by the program. Your program must have the following header information within comments:

```
/*  
    Name:  
    BlazerId:  
    Homework #:  
*/
```

Create a tar/zip file (only tar and zip are accepted, all other file formats will not be considered) of the homework3 directory using the following filename format: `blazerId-cs431-hw3.tar` or `blazerId-cs431-hw3.zip` (graduate students use 631 or 731 instead of 431). The tar/zip file must

include the source code, txt/word/pdf/ps document for the typed solution to short answer questions and the feedback questions, instructions for executing the programs. Login to WebCT and go to the assignments section and upload the tar/zip file. There is no need to turn in any printed solutions for this homework, WebCT submission is sufficient.

**9. Late Submissions:**

Submissions must be made on the due date before the beginning of the class. Late submissions will lose 10% for every 24-hour period, up to a maximum of 50% (weekends and holidays count as one 24-hour period). Any submissions made after one-week will receive a score of 0 for this homework.

**10. Resources:**

1. Apache Tomcat Setup: Instructions provided in the document "Tomcat Setup" at WebCT
2. HTML Tutorial – <http://www.w3schools.com/html/>
3. Javascript Tutorial – <http://www.w3schools.com/js/>
4. JSP Tutorial – <http://www.jsptut.com>
5. Servlets and JavaServer Pages Tutorial – <http://www.apl.jhu.edu/~hall/java/Servlet-Tutorial/>
6. Hibernate Tutorial – [http://www.hibernate.org/hib\\_docs/v3/reference/en/html/tutorial.html](http://www.hibernate.org/hib_docs/v3/reference/en/html/tutorial.html)
7. General Java Help: Java Almanac: <http://java.sun.com/developer/codesamples/examplets/>