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**Objective:**

Students will be explored to standard design and development of web based solutions using multi-tier architecture. They should have good understanding of different technologies on client and server side components.

**Course Outcomes:**

- ✓ Students are able to design very good front end using HTML, CSS, JavaScript, AJAX.
- ✓ Students are able to develop applications on struts and hibernate frameworks.
- ✓ Students are able to develop applications to interact with database using connection pooling.

**Skills:**

- ✓ Learn MVC standard development of applications.
- ✓ Learn working with Integrated Development Environment.
- ✓ Learn internationalization concepts.
- ✓ Learn web services concepts.

**Activities:**

- ✓ Ask the students to install the following software if not installed and work with configuration files to identify port number and integration.
  - i. JDK current version
  - ii. apache tomcat server
  - iii. MYSQL/Oracle software
  - iv. Eclipse/My Eclipse/Net beans ID's Add struts, hibernate JARS
- ✓ Develop a university website and deploy in free hosting server.
- ✓ Develop a personnel website and host in free hosting server.
- ✓ Develop 2 applications one is bus ticket booking another one is for service provider and provide communication between these using web services.

**UNIT I**

**Client Side Technologies:** Overview of HTML - Common tags, XHTML, capabilities of HTML5, Cascading Style sheets, CSS3 enhancements, linking to HTML Pages, Classes in CSS, Introduction to JavaScripts, variables, arrays, methods and string manipulation, BOM/DOM (Browser/Document Object Model), accessing elements by ID, Objects in JavaScript, Dynamic HTML with JavaScript and with CSS, form validation with JavaScript, Handling Timer Events Simplifying scripting with JQuery, JASON for Information exchange.

**UNIT II**

**Introduction to Java Servlets:** Introduction to Servlets, Lifecycle of a Servlet, Reading request and initialization parameters, Writing output to response, MIME types in response, Session Tracking: Using Cookies and Sessions, Steps involved in Deploying an application, Database Access with JDBC and Connection Pooling. Introduction to XML, XML Parsing with DOM and SAX Parsers in Java, Ajax - Ajax programming with JSP/Servlets, creating XML Http Object for various browsers, Sending request, Processing response data and displaying it, Introduction to Hibernate.

### UNIT III

**Introduction to JSP:** JSP Application Development: Types of JSP Constructs (Directives, Declarations, Expressions, Code Snippets), Generating Dynamic Content, Exception Handling, Implicit JSP Objects, Conditional Processing, Sharing Data Between JSP pages, Sharing Session and Application Data, Using user defined classes with jsp:useBean tag, Accessing a Database from a JSP

### UNIT IV

**Introduction to Struts Framework:** Introduction to MVC architecture, Anatomy of a simple struts2 application, struts configuration file, Presentation layer with JSP, JSP bean, html and logic tag libraries, Struts Controller class, Using form data in Actions, Page Forwarding, validation frame work, Internationalization.

### UNIT V

**Service Oriented Architecture and Web Services:** Overview of Service Oriented Architecture – SOA concepts, Key Service Characteristics, Technical Benefits of a SOA, **Introduction to Web Services**– The definition of web services, basic operational model of web services, basic steps of implementing web services.

**Core fundamentals of SOAP** – SOAP Message Structure, SOAP encoding, SOAP message exchange models, Describing Web Services –Web Services life cycle, anatomy of WSDL, Introduction to Axis– Installing axis web service framework, deploying a java web service on axis. Web Services Interoperability – Creating java and .Net client applications for an Axis Web Service.

## LABORATORY EXPERIMENTS

### List of Programs

1. Write a HTML page including user name: text box, password: Password box, age: text box, mail id: text box. Write a java script to validate HTML page user name: should not be empty password: 1. should not be empty 2. should have one upper case letter 3. one lower case letter 4. one special character 5. one integer. Age: should be between 0 to 99. mail should be valid mail. If all the details are true then display valid user else display corresponding error message.
2. Write an HTML page. That contains a selection box with a list of 5 countries. When the user selects a country its states should be printed in the next list. Use the AJAX properties.
3. Create an XML document that contains 10 users information. Write a java program, which takes user Id as input and returns the user details by taking the user information from the XML document using a)DOM parser and b)SAX parser.
4. Implement the following web applications using struts and hibernate
  - i. A user validation web application, where the user submits the login name and password to the server. The name and password are checked against the data available in database and if the data matches, a successful login page is returned. Otherwise a failure message is shown to the user.
  - ii. Modify the above program use XML instead of database.
5. A web application takes a name as input and on submit it shows a hello <name> at the top right corner of the page and provides a logout button. On clicking this button, it should show a logout page with thank you <name> message with the duration of usage (hint: use session to store name and time)

6. Develop a library management system using struts and hibernate.
7. Develop a student attendance monitoring system using struts and hibernate.
8. Develop an e-commerce application.

**Text Books:**

1. Chris Bates, “Web Programming, building internet applications”, Willey, 3<sup>rd</sup> edition, 2007.
2. Herbert Schild. “The Complete Reference Java”, McGraw-Hill/Osborne, 7<sup>th</sup> edition, 2005.
3. Hans Bergsten, “Java Server Pages”, O'Reilly, 3<sup>rd</sup> edition, 2009
4. James Goodwill, Richard Hightower, “Professional Jakarta Struts” , John Willey & Sons, 1<sup>st</sup> edition, 2004.
5. R. Nagappan, R. Skoczylas, R.P. Sriganesh, “Developing Java Web Services”, Wiley India, 2<sup>nd</sup> edition– 2008.
6. Eric Newcomer and Greg Lomow, “Understanding SOA with Web Services”, Pearson Edition – 2009
7. James McGovern, Sameer Tyagi et al., “Java Web Service Architecture”, Elsevier - 2009

**Reference Books:**

1. R.W.Sebesta, “Programming the world wide web”, Pearson,4th edition, 2008
2. Marty Hall and Larry Brown “Core SERVLETS ANDJAVASERVER PAGES”, Pearson, 2<sup>nd</sup> edition, 2009.
3. I Dietel and Nieto “Internet and World Wide Web – How to program” , PHI/Pearson, 4<sup>th</sup> edition, 2007.