M.Sc. (CA) - 2th Semester

040020208- Web Application Development

Teaching Schedule

Objectives: To design, develop and deploy web based application using Server Side Technologies along with session management, MVC design pattern and Tag libraries.

Course Outcomes: Upon completion of the course, students shall be able to

CO1: Differentiate usage of system architecture and containers.
CO2: Develop servlets using HTTP Request and Response headers.
CO3: Demonstrate session management in servlet technology.
CO4: Develop Java Server Pages using declaratives, directories and Tag libraries.
CO5: Design web application using MVC design pattern.
CO6: Deploy web applications.

Unit	Sub Unit	No. of Lecture (s)	Topics	Reference Chapter/Additional Reading	Teaching Methodology	Evaluation Parameters
1	1.1					
	1.1.1	2	Single tier, two tier, three tier, multi tier architecture	SV#3, Page No:36-41	Presentation	
	1.1.2	2	Enterprise architecture : Client tier, Web tier, Business tier, EIS tier	SV#3, Page No: 41-45	Presentation	
	1.2					
	1.2.1	1	Java EE containers	SV#3, Page No: 46-49	Presentation	
2	2.1	2	Servlet Basics, Basic Servlet Structure, Servlets Generating text/plain and text/html content	ML#3, Page No: 66- 72	Chalk-Talk, Presentation,	
	2.2	2	Packaging Servlets, The Servlet Life-Cycle	ML#3, Page No: 72-85	Chalk-Talk	

	2.3	2	Handling Client Request Form Data, Reading Form Data from Servlets,	ML#4, Page No: 95-107	Presentation, Practical Problem demo	PR Quiz-1
	2.4	1	Handling Client Request, Reading Request Headers, Understanding HTTP/1.1 Request Headers	ML#5, Page No: 147-156	Presentation, Practical Problem demo	
	2.5	1	Changing the page according to how the user got there, Accessing the Standard CGI Variables	ML#5, Page No: 163-173	Presentation, Practical Problem demo	
	2.6	1	Generating the Server Response, HTTP Status Codes, Specifying Status Codes, HTTP / 1.1 Status Codes	ML#6,Page No: 175-184	Presentation, Practical Problem demo	
	2.7	2	Using Redirections, HTTP Response Headers, Setting Response Headers from Servlets, Understanding HTTP / 1.1 Response Headers	ML#6, Page No: 184-185 ML#7, Page No:195-204	Presentation, Practical Problem demo	TH Unit Test-1

3	3.1	1	Handling Cookies, Remembering Usernames and Passwords	ML#8, Page No: 229-234	Practical Problem demo	TH Quiz-1
	3.2	2	Deleting Cookies, Sending and Receiving Cookies, Using Cookie Attributes	ML #8, Page No: 234-244	Presentation, Practical Problem demo	
	3.3	1	Differentiating Session Cookies from Persistent Cookies	ML #8, Page No: 244- 247	Presentation, PR demo	
	3.4	1	Using Cookies to Remember User Preferences	ML #8, Page No: 255- 260	Presentation, PR demo	
	3.5	2	Session Tracking, Need for Session Tracking, Session Tracking API	ML #9, Page No: 263- 272	Presentation, PR Demo	
	3.6	1	Encoding URLs Sent to the Client, Accumulating a List of User Data	ML #9, Page No: 272- 280	Presentation	
4	4.1	1	JSP Basic Syntax, HTML Text, HTML comments, Template Text	ML#10, Page No:304-305 ML#10, Page No:314-315	Presentation	
	4.2	1	JSP Comment, JSP Expression, JSP	ML#10, Page	Presentation	

			Scriptlet, JSP Declaration, JSP Directives, JSP Action	No:315-317		
	4.3	1	JSP Expression Language Element, Custom Tag (Custom Action)	ML#10, Page No:316-344	Presentation	
	4.4	1	Using JSP Scripting Elements, Using Predefined Variables, XML syntax for Expressions		Presentation, Practical demo	
	4.5	1	Scriptlets, Declarations and Directives, Using Scriptlets, Using Declarations	ML#11, Page No: 344-350	Presentation	
	4.6	1	Using Page Directive, Using Standard Actions Tags – <jsp:plugin>, <jsp:forward>, <jsp:include>	ML#12, Page No: 353-370 ML#13, Page No: 373-370-396	Presentation, Practical demo	
	4.7	2	Using JavaBeans in JSP pages – <jsp:useBean>, <jsp:getProperty>, <jsp:setProperty>, Sharing Beans, Use of Scopes and their Attributes	ML#14, Page No: 399-432	Presentation, Practical demo	
	4.8	2	Executing SQL and Processing Results of a Query, Using PreparedStatement	KJ#6,Page No:124-143 ML#17, Page	Chalk-Talk, Practical demo	

			and CallableStatement on web pages.	No: 499-541		TH Unit Test-2
5	5.1	1	Integrating Servlets and JSP in a Web Application	ML#15, Page No: 435-461	Chalk-Talk, Presentation	
	5.2	2	Implementing MVC with RequestDispatcher, Understanding Data Sharing Between Servlets and JSP		Chalk-Talk, Presentation	
	5.3	1	JSP Expression Language, Accessing Scoped Variables, Bean Properties	ML#16, Page No: 465-480	Presentation	
	5.4	1	Collections and Implicit Objects Using EL, Using EL Operators	ML#16, Page No: 481-491	Chalk-Talk, Presentation	
6	6.1	1	Structure of Web Applications and the Role of Deployment Descriptor (web.xml) file	MLY#1, Page No: 5-8 MLY#2,Page No: 35-38	Chalk-Talk, Presentation	
	6.2	2	Servlet and JSP Filters	MLY#5, Page No: 204-226	Presentation	
	6.3	2	Tag Library– Basics	MLY#7, Page No: 348-377	Chalk-Talk, Presentation	
	6.4	1	Using JSTL – c:out, c:forEach, c:forTokens, c:if, c:choose, c:set,	MLY#9, Page No: 420-437	Chalk-Talk, Presentation	

			c:remove, c:import, c:url, c:param, c:redirect and c:catch Tags			TH Internal

Text Books:

1. Hall, M., Brown, L. "Core Servlets and JavaServer Pages Volume – 1", Pearson Education. [ML]

2. Hall, M., Brown, L. , Chaikin, Y. "Core Servlets and JavaServer Pages Volume – 2", Pearson Education. [MLY]

Reference Books:

1. Shah, S. and Shah, V. "Java EE 6 Server Programming for Professionals", SPD. [SV]

2. Murach, J., Steelman, A, "Java Servlets and JSP", SPD. [MS]

3. Keogh, J. "J2EE: The complete Reference", McGraw-Hill. [KJ]

4. Deitel, P. and Deitel, H. "Java: How to Program, 8th edition", PHI/PearsonEducation Asia [PH]

Note : # denotes chapter number.

Course Objectives and Course Outcomes Mapping:

- Design, develop and deploy web based application: CO1, CO2, CO4, CO5, CO6
- Usage of Server Side Technologies along with session management: CO2, CO3, CO4
- Usage of MVC design pattern: CO5
- Usage of Tag Libraries: CO4

Course Units and Course Outcomes Mapping:

Unit No.	Unit	Course Outcome					
		CO1	CO2	CO3	CO4	CO5	CO6
1	Architecture	✓					
2	Servlet Programming		✓				
3	Session Management		✓	✓			
4	JSP Programming				✓		✓
5	MVC Design pattern					✓	
6	Tag Library						✓

Course Outcomes and Program Outcome Mapping:

Course Outcomes	Program outcome					
	PO1	PO2	PO3	PO4	PO5	PO6
CO1	✓	✓			✓	✓
CO2						
CO3	✓					
CO4						
CO5		✓			✓	
CO6		✓			✓	

Computing Environment:

A student must have the following computing environment in laboratory and or on his/her laptop and.

- Netbeans IDE with one Web Server

Modes of Transaction (Delivery):

- Lecture method is generally used but along with it, as and when required, discussion method would be fruitful. It may be supplemented with various appropriate audio-visual aids.
- Practical exercises should be solved by the students.
- Self Study of following part of the syllabus shall be done by the students:
  5.4 Using EL Operators
  6.4 Using JSTL – c:out, c:forEach, c:if, c:param, c:redirect Tags

Activities/Practicum:

The following activities shall be carried out by the students.

- Study of uploading files with Java Servlet Technology.

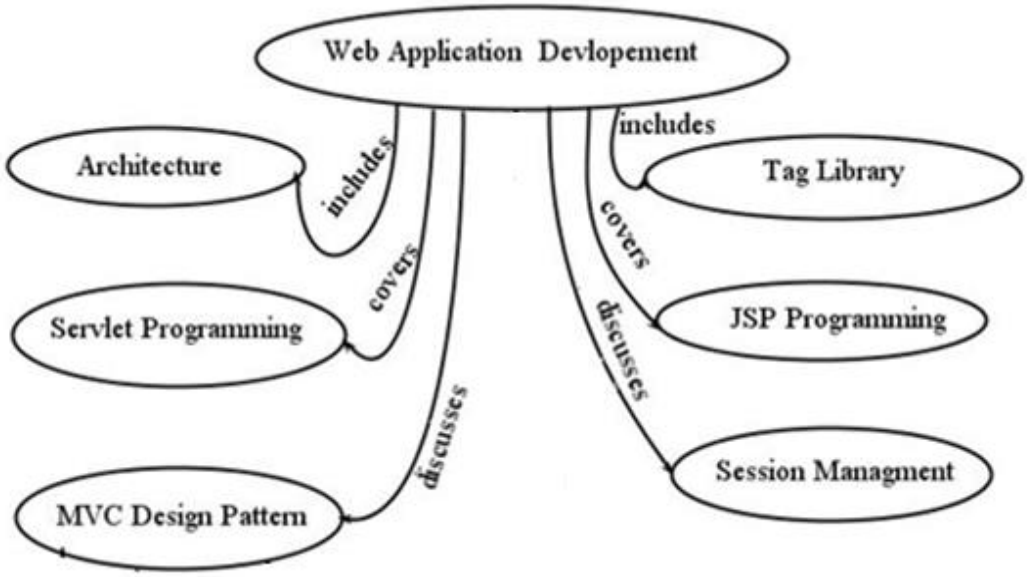
The following activities shall be carried out by the teacher.

- Demonstration of MySQL database connection and data retrieval using JSP.
- Demonstration of usage of Java bean for activity 1 stated above.
- Demonstration of redirecting the query from own page to Google page and retrieving back the results.

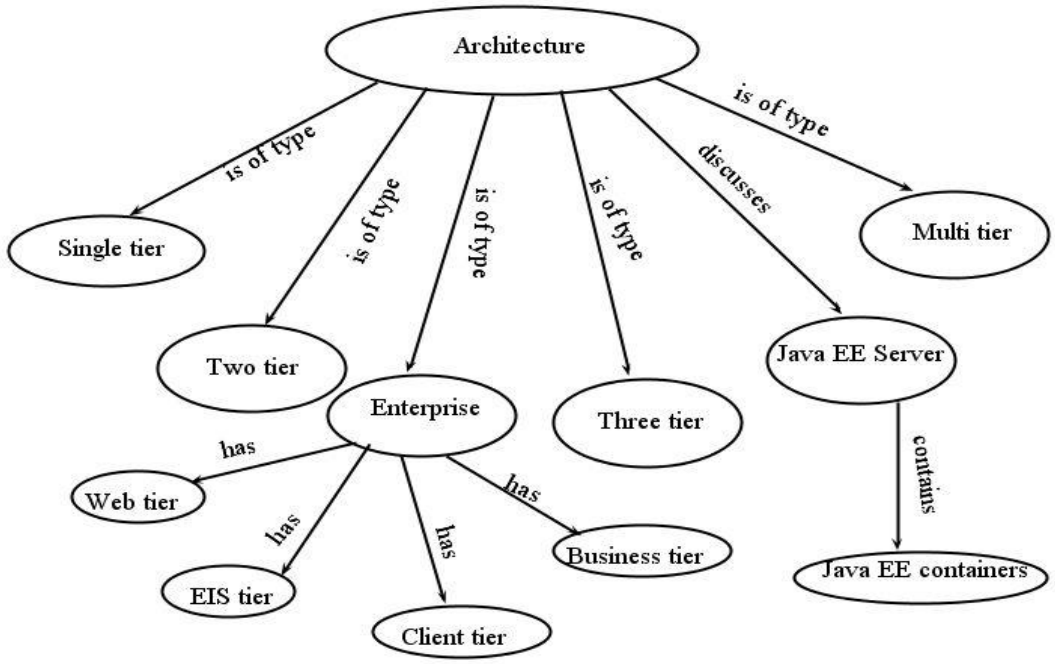
Concept map:

It is a hierarchical / tree based representation of all topics covered under the course. This gives direct / indirect relationship /association among topics as well as subtopics.

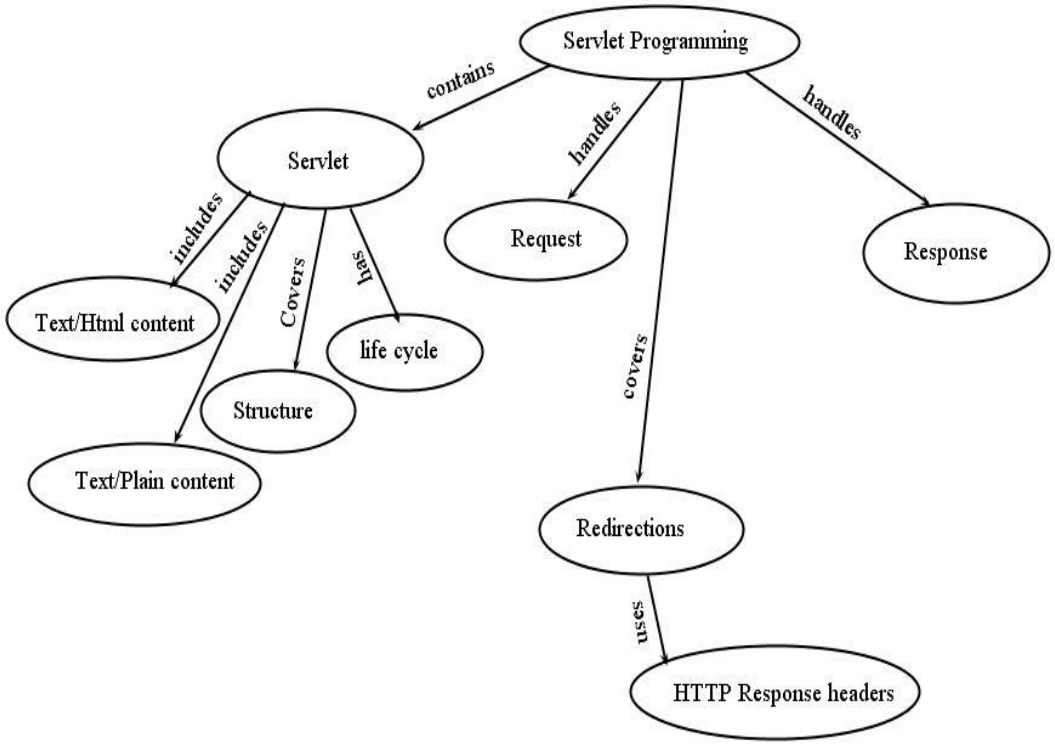
Web Application Development



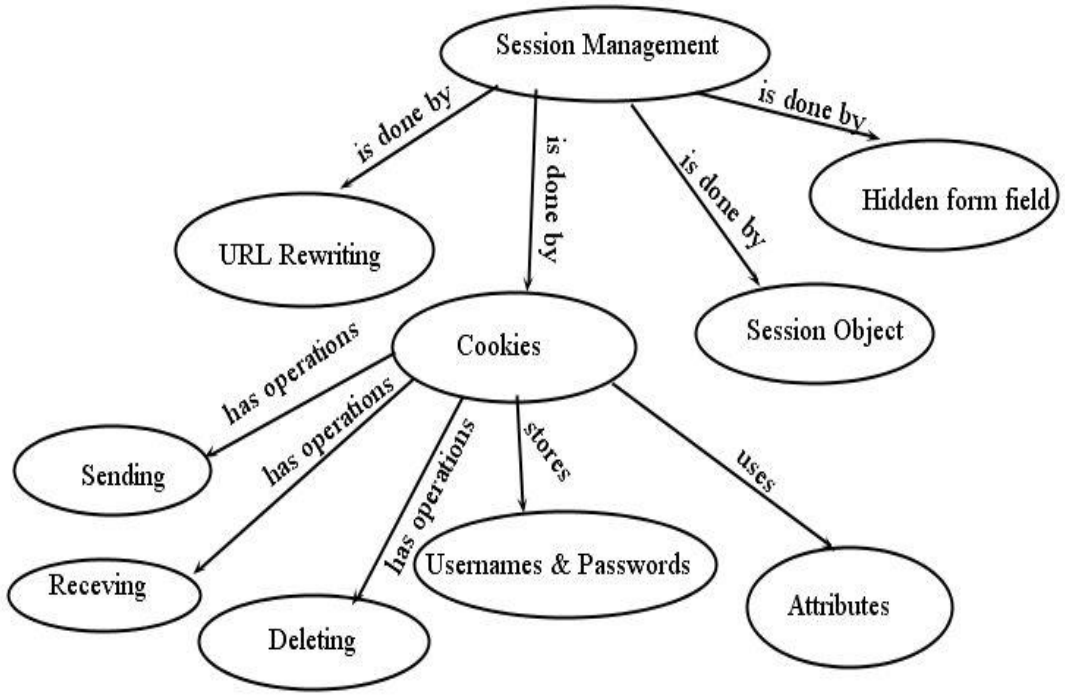
Unit-1: Architecture



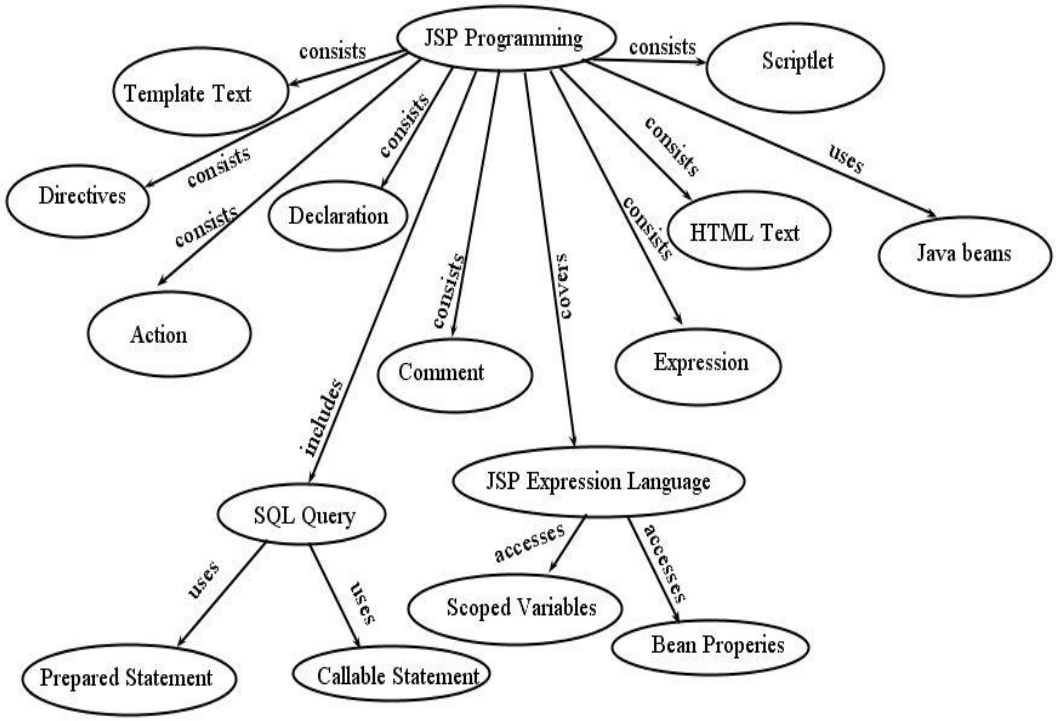
Unit-2: Servlet Programming



Unit-3: Session Management



Unit-4: JSP Programming and Unit-5: MVC Design pattern



Unit-6: Tag Library