

15B28CI681: Advanced Java Programming Lab

Course Credit: 1

Semester: VI

Objective:

- Using Graphics, Animations and Multithreading for designing Simulation and Game based applications.
- Design and develop GUI applications using Abstract Windowing Toolkit (AWT), Swing and Event Handling.
- Design and develop Web applications
- Designing Enterprise based applications by encapsulating an application's business logic.
- Designing applications using pre-built frameworks.

Learning Outcomes:

Students should be able to-

1. learn the Internet Programming, using Java Applets
2. create a full set of UI widgets and other components, including windows, menus, buttons, checkboxes, text fields, scrollbars and scrolling lists, using Abstract Windowing Toolkit (AWT) & Swings
3. apply event handling on AWT and Swing components.
4. learn to access database through Java programs, using Java Data Base Connectivity (JDBC)
5. create dynamic web pages, using Servlets and JSP.
6. make a reusable software component, using Java Bean.
7. invoke the remote methods in an application using Remote Method Invocation (RMI)
8. understand the multi-tier architecture of web-based enterprise applications using Enterprise JavaBeans (EJB).
9. develop Stateful, Stateless and Entity Beans.
10. use Struts frameworks, which gives the opportunity to reuse the codes for quick development.
11. map Java classes and object associations to relational database tables with Hibernate mapping files

List of Experiments

S NO	Topics
1.	Java Database Connectivity (JDBC): JDBC Product, Types of Drivers, Two-Tier Client/Server Model, Three-Tier Client/Server Model, Basic Steps of JDBC, Creating and Executing SQL Statement, The Result Set Object, Working with Database MetaData Interface
2.	Java Servlets: Servlet Interaction & Advanced Servlets, Life cycle of Servlet, Java Servlet Development Kit, Javax.servlet

	package, Reading Servlet Parameters, Reading Initialization Parameters, The javax.servlet.http Package, Handling HTTP.
3.	Java Server Pages (JSP): JSP Technologies, Understanding the Client-Server Model, Understanding Web server software, Configuring the JSP Server, Handling JSP Errors, JSP Translation Time Errors, JSP Request Time Errors, Creating a JSP Error Page
4.	Remote Method Invocation (RMI): RMI Architecture, Designing RMI application, Executing RMI application
5.	Enterprise Java Beans (EJB): Types of EnterpriseJava beans, Session Bean & Entity Bean, Features of Session Bean, Life-cycle of Stateful Seession Bean, Features of Entity Bean, Life-cycle of Entity Bean, Container-managed Transactions & Bean-managed Transactions, Implementing a container-managed Entity Bean
6.	Struts: Introduction to the Apache Struts, MVC Architecture, Struts Architecture, How Struts Works? Introduction to the Struts Controller, Introduction to the Struts Action Class, Using Struts ActionFrom Class, Using Struts HTML Tags, Introduction to Struts Validator Framework, Client Side Address Validation in Struts, Custom Validators Example, Developing Application with Struts Tiles
7.	Hibernate: Introduction to Hibernate 3.0, Hibernate Architecture, First Hibernate Application.

References

1. Java the Complete Reference, ninth edition by Herbert Schild, Publisher: McGraw Hills
2. Head First EJB 3.0 by Kathy Sierra, Bert Bates, Publisher: O'Reilly Media
3. Head First Servlets and JSP by Bryan Basham, Kathy Sierra & Bert Bates, Publisher: O'Reilly Media
4. Just Hibernate, A Lightweight Introduction to the Hibernate Framework by Madhusudhan Konda, Publisher: O'Reilly Media
5. Programming Jakarta Struts, 2nd Edition by Chuck Cavaness, Publisher: O'Reilly Media

Evaluation Scheme:

1. Mid Term Exam (Viva and Written Exam)	20
2. End term Exam (Viva and Written Exam)	30
3. Lab Records	5
4. Regular Assessment (Quality and quantity of experiment performed, Learning laboratory skills, Attendance etc.)	30
5. Project	15

Total	100
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