12B1WCI733: Advanced JAVA

Course Credit: 3
Semester: VII

Introduction

This course will expose students to the depth and breadth of modern programming practice, with the goal of making students better programmers. This course aims to introduce the students to some concepts of advanced java programming and practice on reusing components. The course covers advanced features of Java such as Applets, Multithreading, Swings, Servlets, Java Server Pages, Java Database Connectivity, Java Bean, Remote Method Invocation, Enterprise Java Beans, Struts and Hibernate.

Course Objectives (Post-conditions)
Knowledge objectives:

You will learn the Internet Programming, using Java Applets
2. You will be able to 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. You will be able to perform event handling on AWT and Swing components.
4. You will learn to access database through Java programs, using Java Data Base Connectivity (JDBC)
5. You will learn how to create dynamic web pages, using Servlets and JSP.
6. You will learn to make a resusable software component, using Java Bean.
7. You will learn to 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. You will learn to develop Stateful, Stateless and Entity Beans.
10. To make the students familiar with Struts frameworks, which gives the opportunity to reuse the codes for quick development.
11. Learn to map Java classes and object associations to relational database tables with Hibernate mapping files

Application objectives:

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

Expected Student Background (Preconditions)

Oriented Programming with proficiency in Core Java

Topics Outline:

S NO	Topics	Hrs
1	Applet Programming: Structure and Life Cycle of a Java Applet, Graphics, Multithreading and Animation, Abstract Windowing Toolkit, Event Handling, Swings.	8
2	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	4
3	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.	6
4	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
5	Remote Method Invocation (RMI): RMI Architecture, Designing RMI application, Executing RMI application	3
6	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	8
7	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	6
8	Hibernate: Introduction to Hibernate 3.0, Hibernate	3

	Architecture, First Hibernate Application.	
	Total	42

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:

S.No	Examination	Marks
1	T-1	15
2	T-2	25
3	T-3	35
4	*Internal Marks	25

*Internal Marks Breakdown:

Assignments 9 marks (3x3)

Quizzes 12 marks (3x4)

Regularity 4 Marks