Center for Distance and Online Education

23OMC209

Advanced Java Programming Laboratory

Master of Computer Applications (MCA)

23OMC209– Advanced Java Programming Laboratory

Program	Master of Computer Applications
Semester	2
Course Title	Advanced Java Programming Laboratory
Course Code	23OMC209
Course Credits	2
Course Type	Laboratory

1. Course Summary

This course aims to gain the skills, hands-on experience, and practical knowledge necessary to build simple applications using Advanced Java Programming. The students learn the concepts of classes and objects, string handling, exception handling, inheritance, packages and interfaces, and their implementation in Java. Students make use of I/O streams in Java. The students also learn the concepts of creating and using servlets and handling client requests and server responses. Students learn to use GET and POST methods for passing form data to Servlets. This course also emphasizes on the advantages of cookies and sessions. Students are trained to develop server-side code using Servlets and Java Server Pages. Students learn to apply the concepts of exception handling for developing efficient JAVA applications to handle run-time errors. They learn the basics of Java Beans and Java database connectivity(JDBC). Students learn the techniques of debugging and testing Java Programs.

2. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

CO-1. Apply the concepts of object-oriented programming and demonstrate the use of method overloading, and string handling in Java.[L-3]

CO-2. Demonstrate the use of inheritance, interfaces, and polymorphism to write simple Java programs[L-3]

CO-3. Demonstrate the use of Servlets and JSP in developing server-side code.[L-3]

CO-4. Demonstrate the use of Java Beans in JSP pages.[L-3]

CO-5. Apply the concepts of exception handling for developing efficient JAVA applications to handle run-time errors.[L-3]

CO-6. Develop applications using GET and POST methods for passing data to Servlets.[L-6]

3. Course Curriculum

Advanced Java Programming Laboratory - Program List

1. Create a Java class "Employee" with the attributes - employee number, name, designation and salary.
   a. Implement methods to set and display these attributes
   b. Implement parameterized constructors for initializing these attributes. Use "this" keyword to illustrate the difference between instance variable and constructor parameters. Display these attributes.

2. Write a Java program to demonstrate method overloading and constructor overloading.

3. Write a Java program to perform the following operations on a string.
   a. Count the number of characters and digits.
   b. Check whether the given string is palindrome or not.

4. Write a Java program to demonstrate single and multi-level inheritance. Display the order of execution of constructors in multi-level inheritance.

5. Write a Java program to demonstrate method overriding.

6. Write a Java program to illustrate the use of
   a. Abstract class
   b. Interfaces in Java

7. Write a Java program to demonstrate exception handling. Show the order of execution of "try", "catch" and "finally" blocks when an exception occurs and when it does not occur during the execution by providing appropriate inputs during execution and displaying messages.

8. Write a Java program to illustrate the use of I/O streams.

9. Write a Java Servlet program to implement a dynamic HTML using Servlet(Student name and enrolment number should be accepted using HTML and displayed using a Servlet).

10. Write a Java Servlet program to demonstrate the use of cookies.

11. Write a Java Servlet program to demonstrate the use of GET and POST methods for handling HTTP client requests and server responses.

12. Write a JSP program to demonstrate the use of Java Beans.

4. Course Articulation Matrix (CO-PO-PSO Map)

	Programme Outcomes (POs)												Programme Specific Outcomes (PSOs)			
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2	PSO-3	PSO-4
CO-1	3	2	3					2	1	1	2		3	3	2	2
CO-2	3	2	3		2			2	2	1	2	2	3	3	1	1
CO-3	3	3	3		2			2	1	1	2	2	3	3	3	2
CO-4	3	3	3		2			2	2	1	2		3	3	3	3
CO-5	3	3	3		2			2	1		2		2	2	1	1
CO-6	3	3	3		2			2	1	1	2		2	2	1	1
		3: Very Strong Contribution, 2: Strong Contribution, 1: Moderate Contribution														

5. Course Resources

a. Essential Reading

1. Herbert Schildt, 2014,"The Java Complete Reference", 9th Edition, Tata McGraw-Hill
2. Marty Hall, Larry Brown, 2014, "Core Servlets and Java Server Pages Vol 1: Core Technologies", 2nd Edition, Sun Microsystem.

b. Recommended Reading

1. Balagurusamy E, "Programming in JAVA", Tata McGraw Hill
2. Java 6 Programming Black Book, Dreamtech Press, 2012

c. Websites and Other Electronic Resources

1. https://www.coursera.org/
2. http://nptel.ac.in/

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