

**II YEAR – IV SEMESTER  
COURSE CODE: 4BIT4C1**

**CORE COURSE VII – JAVA PROGRAMMING**

**Unit I**

**Fundamentals of Object Oriented Programming**

Introduction – Object Oriented Paradigm – Basic Concepts of OOP – Benefits of OOP – Applications of OOP.

**Java Evolution**

Java History – Java Features – Java and Internet – World Wide Web – Web Browsers – H/W and S/W requirements – Java Support Systems – Java Environment.

**Overview of Java language**

Introduction – Simple Java Program – Comments – Java Program Structure – Tokens – Java Statements – Implementing a Java Program – JVM – Command Line Arguments.  
Constants – Variables – Data Types – Type Casting.

**Unit II**

**Operators and Expressions**

Arithmetic Operators – Relational, Logical, Assignment, Increment and Decrement, Conditional, Bitwise, Special Operators – Arithmetic expressions, Evaluation of expression – Precedence of Arithmetic Operators – Type Conversions – Operator Precedence and associativity – Mathematical Functions.

**Decision Making and Branching**

If – if....else – Nesting of if..... Else – else if – switch - ?: operator.

**Decision Making and Looping**

While – do – for – jump in loops – labeled loops.

**Unit III**

**Classes, Objects and Methods**

Defining a class – Adding variables, methods – Creating objects – Accessing Class Members– Constructors – Methods overloading – static members – Nesting of Methods – Inheritance – Overriding methods – final Variables and methods – Final classes – finalizer methods – Abstract methods and classes – visibility control.

**Arrays, Strings and Vectors**

Arrays – One Dimensional Arrays – Creating an array – Two Dimensional Arrays – Strings – Vectors – Wrapper Classes

**Interfaces: Multiple Inheritance**

Defining interfaces – Extending interfaces – implementing interfaces – Accessing interface variables.

## Unit IV

### Packages

Java API Packages – Using system packages – Naming conventions – Creating Packages – Accessing a Package – Using a Package – Adding a Class to a Package – hiding classes.

### Multithreaded Programming

Creating Threads – Extending the Thread Class – Stopping and Blocking a Thread – Life Cycle of a Thread – Using Thread methods – Thread Exceptions – Thread Priority – Synchronization – Implementing the ‘Runnable’ Interface

### Managing Errors and Exceptions

Types of errors – Exceptions – Syntax of Exception handling code – Multiple Catch Statements – Using finally statement – Throwing our own Exceptions – Using Exceptions for Debugging.

## Unit V

### Applet Programming

How applets differ from Applications – preparing to write applets – Building Applet Code – Applet life cycle – creating an Executable Applet – Designing a Web Page – Applet Tag – Adding Applet to HTML file – Running the Applet – Passing parameters to Applets – Displaying Numerical values – Getting input from the user

### Graphics Programming

The Graphics Class – Lines and Rectangles – Circles and Ellipses – Drawing Arcs – Drawing Polygons – Line Graphs – Using Control Loops in Applets – Drawing Bar Charts.

### Text Book

- 1) “**Programming with JAVA**”, Second Edition 2006”, **E. Balagurusamy**, TATA McGraw-Hill Publishing Company Limited, New Delhi

UNIT I	Chapters	: 1, 2, 3, 4
UNIT II	Chapters	: 5, 6, 7
UNIT III	Chapters	: 8, 9, 10
UNIT IV	Chapters	: 11, 12, 13
UNIT V	Chapters	: 14, 15

### Reference Books

- 1) “**Java 2 – The Complete Reference**”, Fifth Edition, 2006 **Herbert Schildt**, TATA McGraw Hill Publishing Company Limited, New Delhi.
- 2) “**Java – How to Program**”, Sixth Edition 2005, **H.M. Deitel, P.J.Deitel**, Pearson Education Pvt. Ltd, Delhi.



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**CORE COURSE VIII – JAVA PROGRAMMING LAB**

1. Write a WAP to find greatest of three numbers
2. WAP to calculate factorial of a number using command line arguments
3. WAP to read a set of numbers in an array & to find the sum and average of them
4. WAP a program to maintain the student record containing roll number, Name, Marks1, Marks2, Marks3 as data member and getdata(), display() and setdata() as member functions
5. WAP to increment the employee salaries on the basis of there designation (Manager – 5000, General Manager – 10000, CEO – 20000, worker – 2000). Use employee name, id, designation, salary as data member and inc\_sal as member function
6. Write a class bank, containing data member: Name of the Depositor, A/c type, Type of A/c, Balance amount. Member function: To assign initial value, To deposit an amount, to withdraw an amount after checking the balance (which should be greater than Rs.500), To display name & balance
7. Design three classes: Student, Exam and Result. The student class has data members such as roll no, name etc. Create a class Exam by inheriting the Student class. The Exam class adds data members representing the marks scored in six subjects. Derive the Result from class Exam and it has its own members such as total marks and average. Calculate the total marks and average
8. Calculate area of different geometrical figures (circle, rectangle, square, triangle) using function overloading
9. Create a class Employee. Derive 3 classes from this class namely, Programmer, Analyst & Project Leader. Take attributes and operations on your own
10. WAP to implement multiple Inheritance using Interface
11. WAP to create Student class in package1 and Marks class in package2 which inherit Student class. Calculate the total and average of marks in Result class
12. WAP to handle ArithmeticException and ArrayIndexOutOfBoundsException
13. WAP to create and handle your own Exception
14. WAP to create a Thread by extending Thread class
15. WAP to create a Thread by implementing Runnable interface
16. WAP to read a number from keyboard using BufferedReader classes & to find out whether the number is prime or not
17. WAP to design a simple Applet and show it within web browser
18. WAP to design a Frame
19. WAP to demonstrate even handler: key and mouse
20. WAP to design the interface of calculator using Grid Layour

