

DMAD-1-02T: Java Programming

Total Marks: 100
External Marks: 70
Internal Marks: 30
Credits: 6
Pass Percentage: 40%

Course: Java Programming	
Course Code: DMAD-1-02T	
Course Outcomes (COs) After the completion of this course, the students will be able to:	
CO1	Mastery of core Java principles, encompassing variables, data types, control structures, and the application of object-oriented programming concepts to address diverse programming challenges.
CO2	Competency in crafting Java applications, involving the creation of modular, well-structured code, effective exception handling, and the implementation of efficient data structures and algorithms to address practical scenarios.
CO3	Strong debugging skills, including the identification and resolution of errors within Java code, an understanding of common programming pitfalls, and the application of effective troubleshooting methods to enhance program reliability.
CO4	Exploration of advanced Java topics such as multithreading, networking, file input/output, and database connectivity. Proficiency in utilizing Java's standard libraries and APIs, demonstrating competence in areas such as working with collections, managing network interactions, and connecting to databases.
CO5	Acquisition of collaborative software development skills, encompassing experience with version control systems like Git, adherence to established coding standards, and the cultivation of effective documentation habits. Capability to contribute effectively to team-based Java projects.

Detailed Contents:

Module	Module Name	Module Contents
Module I	Fundamental of Java	Java and the Internet: The Java programming language and its characteristics; Java development kit, Java run- time environment; Java compiler. Fundamentals of Java: Java Vs. C++, Byte Code, Java Virtual Machine, constants, variables, data types, operators, expressions, control structures, defining class, creating objects, accessing class members, constructors, Garbage Collection, method overloading.

Module II	Inheritance	Inheritance: Different types of Inheritance, member access, using super keyword to call super class constructors, creating a multilevel hierarchy, method overriding, dynamic method dispatch, using abstract classes, using Final keyword.
Module III	I/O Basics	I/O Basics: streams, the predefined streams; Reading console Input, Writing console Output. Arrays and Strings: One-dimensional and two-dimensional Arrays, String Handling using String and String Buffer class, String Functions
Module IV	Packages and Exception Handling	Packages: Types of packages, defining a package, importing packages, Access protection Interfaces: Defining an Interface, Implementing Interfaces, Variables in Interfaces, achieving multiple inheritance using interfaces, Interface and Abstract classes.
Module V	Exception Handling	Exception Handling: Java Exception handling model, Types of exception, using Try and catch, Multiple Try and Catch clauses, Nested Try statements, finally block, user defined exceptions.
Module VI	Multithread and Applet Programming	Multi-threaded Programming: The Java Thread model, the Thread class and Runnable interface, creating a Thread using Runnable Interface and extending Thread, Creating Multiple Threads, Thread Priorities, Synchronizations: Methods, Statements, Inter Thread Communication, Deadlock, Suspending, Resuming and Stopping Threads. Applet Programming: Introduction, Types of applet, Life Cycle, incorporating an applet into web page using Applet Tag, running applets, using Graphics class and its methods to draw lines, rectangles, circles, ellipses, arcs and polygons

Books

<ol style="list-style-type: none"> 1. Balaguruswamy, E., "Programming with Java", A Primer, TMH, New Delhi, Latest reprint 2. Bayross, Ivan, "Java 2", BPB publication 3. Schildt, Herbert, "The Complete Reference Java 2", TMH.
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