

II B.Tech I Sem

## 15ACS09-OBJECT ORIENTED PROGRAMMING THROUGH JAVA

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**Course Objectives:**

- Study the syntax, semantics and features of Java Programming Language
- Study the Object Oriented Programming Concepts of Java Programming language
- Learn the method of creating Multi-threaded programs and handle exceptions
- Learn Java features to create GUI applications & perform event handling

**Course Outcomes:**

- Solve problems using object oriented approach and implement them
- Ability to write Efficient programs that handle exceptions
- Create user friendly interface

**UNIT I**

**The History and Evolution of Java:** Java's Lineage, The Creation of Java, How Java Changed the Internet, Java's Magic: The Bytecode, Servlets: Java on the Server Side, The Java Buzzwords, The Evolution of Java, Java SE 8, A Culture of Innovation.

**An Overview of Java:** Object-Oriented Programming, A First Simple Program, A Second Short Program, Two Control Statements, Using Blocks of Code, Lexical Issues, The Java Class Libraries.

**UNIT II**

**Data Types, Variables, and Arrays:** Java Is a Strongly Typed Language, The Primitive Types, Integers, Floating-Point Types, Characters, Booleans, A Closer Look at Literals, Variables, Type Conversion and Casting, Automatic Type Promotion in Expressions, Arrays, A Few Words About Strings, A Note to C/C++ Programmers About Pointers.

**Operators:** Arithmetic Operators, The Bitwise Operators, Relational Operators, Boolean Logical Operators, The Assignment Operator, The ? Operator, Operator Precedence, Using Parentheses.

**Control Statements:** Java's Selection Statements, Iteration Statements, Jump Statements.

**UNIT III**

**Introducing Classes:** Class Fundamentals, Declaring Objects, Assigning Object Reference Variables, Introducing Methods, Constructors, The this Keyword, The finalize( ) Method, A Stack Class.

**A Closer Look at Methods and Classes:** Overloading Methods, Using Objects as Parameters, A Closer Look at Argument Passing, Returning Objects, Recursion, Introducing Access Control, Understanding static, Introducing final, Arrays Revisited, Introducing Nested and Inner Classes, Exploring the String Class, Using Command-Line Arguments, Varargs: Variable-Length Arguments.

#### UNIT IV

**Inheritance:** Inheritance Basics, Using super, Creating a Multilevel Hierarchy, When Constructors Are Executed, Method Overriding, Dynamic Method Dispatch, Using Abstract Classes, Using final with Inheritance, The Object Class.

**Packages and interfaces:** Packages, Access Protection, Importing Packages, Interfaces, Default Interface Methods, Use static Methods in an Interface, Final Thoughts on Packages and Interfaces.

**Exception Handling:** Exception-Handling Fundamentals, Exception Types, Uncaught Exceptions, Using try and catch, Multiple catch Clauses, Nested try Statements, throw, throws, finally, Java's Built-in Exceptions,

Creating Your Own Exception Subclasses, Chained Exceptions, Three Recently Added Exception Features, Using Exceptions.

#### UNIT V

**Multithreaded Programming:** The Java Thread Model, The Main Thread, Creating a Thread, Creating Multiple Threads, Using isAlive( ) and join( ), Thread Priorities, Synchronization, Interthread Communication, Suspending, Resuming, and Stopping Threads. Obtaining A Thread's State, Using Multithreading.

**Enumerations, Autoboxing, and Annotations (Metadata):** Enumerations, Type Wrappers, Autoboxing, Annotations (Metadata), Type Annotations, Repeating Annotations.

#### Text Book:

JAVA The Complete Reference 9<sup>th</sup> edition, Herbert Schildt, Mc Graw Hill Education, 2014.

