

OBJECT ORIENTED PROGRAMMING THROUGH JAVA

Course Code: 19CA3106

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Course Outcomes:

At the end of the course student will be able to

- CO1: Interpret object orientation and Utilize programming strategies
- CO2: Contrast classes and objects and Analyze Inheritance
- CO3: Design Packages, Manage Exceptions and Apply Threads
- CO4: Produce GUI screens along with event handling
- CO5: Identify various classes and methods in java. lang, util, i/o and net packages

UNIT-I: Introduction to Objects

(10 Lectures)

What is Object Oriented Programming?, Object Orientation as a New Paradigm: The Big Picture (TEXT BOOK-2), An Overview of Java: Process Oriented Vs Object Oriented Programming, OOPs Principles, Java Buzz Words, The Byte Code, A First Simple Program
Data Types and Variables, Operators and Expressions, Control Statements, Type Conversion and casting, Lexical Issues in Java, Arrays: Single Dimension, command line arguments, Arrays: Multi Dimension.

Learning Outcomes:

At the end of the module, students will be able to

- Summarize object oriented programming features. (L2)
- Describe Java features. (L2)
- Use various data types and control statements in Java. (L3)

UNIT-II: Introducing Classes

(10 Lectures)

Class Fundamentals with Variables and Methods, Declaring objects for accessing variables and methods, Constructors: Default and Parameterized, this key word and Garbage Collection, Final and Static Key words, Overloading Methods, Overloading Constructors, Using objects as Parameters, Returning objects, String and String Buffer

Inheritance:

Inheritance Basics, Types of Inheritance, Using Super keyword for constructors, Super to call variables and methods, Method Overriding, Dynamic Method Dispatch

Learning Outcomes:

At the end of the module, students will be able to

- Explain classes, objects and constructors. (L2)
- Write Java programs manipulating Strings. (L6)
- Classify different kinds of inheritance. (L4)

UNIT-III: Packages and Interfaces

(11 Lectures)

Defining a Package, importing a package, Package Example, Access Protection, An Access Example, Abstract classes, Interfaces: Defining and Implementing Interfaces

Exception Handling:

Exception Handling Fundamentals, Exception Types, throw, throws and Finally Creating your own exception, Chained Exceptions

Multithreaded Programming:

Java Thread Model, The Main thread, Two ways of Creating a Thread, Creating Multiple Threads, is Alive(),join(), Synchronization, Inter Thread Communication

Learning Outcomes:

At the end of the module, students will be able to

- Demonstrate the use of packages in Java (L2)
- Illustrate exception handling in Java (L3)
- Write Java multi-threaded programs. (L6)

UNIT-IV: Introducing GUI Programming with Swings**(10 Lectures)**

Swing Features, MVC Connection, Components and Containers, Panes, Simple Swing Application, Simple Swing Applet, Layout Managers: Flow, Border, Card, Grid, Grid Bag, Working with Color, Working with Fonts, Painting in Swing, Exploring Swing Components

Delegation Event Model:

Event Classes, Sources and Listeners.

Learning Outcomes:

At the end of the module, students will be able to

- Use swings to build GUI based applications (L3)
- Describe various event classes and listeners (L2)
- Design event driven based GUI applications. (L6)

UNIT-V: Exploring java.lang**(9 Lectures)**

Wrapper classes, Object, Math, Runtime

Exploring java.util:

The collection frame work: ArrayList, HashSet and HashMap, String Tokenizer, Calender, Random, Scanner

Exploring java.io:

File class , Streams

Exploring java.net:

Socket, ServerSocket, InetAddress, DataGramSocket, URL, Client-Server Program using Sockets

Learning Outcomes:

At the end of the module, students will be able to

- Identify various built-in Java classes. (L2)
- Apply various methods of Java built-in classes. (L3)
- Write network based Java applications (L6).

TEXT BOOKS:

1. Herbert Schildt, *Java The complete reference*, 11th Edition, McGrawHill, 2019
2. Timothy budd, *An introduction to object-oriented programming*, 3rd Edition, Pearson Education, 2009.

REFERENCE BOOK:

Y. Daniel Liang, *Introduction to Java Programming Comprehensive Version*, 10th Edition, Pearson, 2015.