COURSE 7: OBJECT ORIENTED PROGRAMMING THROUGH JAVA

Theory   Credits: 3   3 hrs/week

Course Objectives:

To make the students understand the fundamentals of Java programming.

➢ To expose the students to Window based applications using AWT

➢ To make the students to design appropriate Exception Handling in Java

➢To make the students to understand the concepts of Threads Files and

➢I/O Streams, Applets Networking in java.

Course Outcomes:

The student would become competent enough to write, debug, and document well-structured

java applications

➢Demonstrate good object-oriented programming skills in Java

➢ Able to describe recognize, apply, and implement selected design patterns in Java

➢ Understand the capabilities and limitations of Java

➢Be familiar with common errors in Java and its associated libraries

➢ Develop excellent debugging skills

UNIT - I

Introduction to OOPS: Paradigms of Programming Languages – Basic concepts of Object Oriented Programming – Differences between Procedure Oriented Programming and Object Oriented programming - Benefits of OOPs – Application of OOPs. Java: History – Java features – Java Environment – JDK – API. Introduction to Java: Creating and Executing a Java program – Java Tokens- Java Virtual Machine (JVM) – Command Line Arguments –Comments in Java program. Elements: Constants – Variables – Data types - Scope of variables – Type casting – Operators: Special operators – Expressions – Evaluation of Expressions.

Case Study:
1. Study the evolution of JAVA, why it was developed, and how it changed the software industry scenario.

UNIT - II

Control Structures: The if Statement, Nested ifs, The if-else-if Ladder and, Looping Statements: The while Loop, The do-while Loop, for loop and its variations and Nested Loops. Jumping Statements: Break, continue Statement.

Class and objects: Defining a class – Methods – Creating objects – Accessing class members – Constructors – Parameterized Constructors, Adding a Constructor. Arrays: One Dimensional Array – Creating an array – Array
processing – Multidimensional.

Case Study:
1. Study the difference between the looping structured in JAVA And Programming in C.
2. Study the limitation of Constructors in JAVA.

UNIT - III

Inheritance: Defining inheritance –types of inheritance– Method overloading – Static members – Nesting of Methods – this keyword - Overriding methods – Final variables and methods – Final classes – Final methods - Abstract methods and classes – Visibility Control.

Interfaces: Defining interface – Extending interface - Implementing Interface - Accessing interface variables. Strings: Constructing Strings, Operating on Strings, Arrays of Strings

Case Study:
1. Study the inheritance types available in JAVA and try to identify the limitations.

UNIT – IV

Packages: Java API Packages – Defining a Package, System Packages – Naming Conventions – Creating & Package Member Access – Adding Class to a Package.
Multithreading: Creating Threads – Life of a Thread – Defining & Running Thread – Thread Methods – Thread Priority – Synchronization –Implementing Runnable interface – Thread Scheduling.

Case Study:
1. Study the advantages of Package compared to Libraries in Procedural languages.

UNIT – V

Exception Handling: Limitations of Error handling – Advantages of Exception Handling - Types of Errors – Basics of Exception Handling - Syntax of Exception Handling Code, Multiple Catch Statements, Using finally Statement, Throwing Our Own Exceptions

Applets: Introduction, Java applications versus Java Applets, Applet Life-cycle, Working with Applets, The HTML Applet Tag.

Case Study:
1. Study and present the limitation of Applets in Web application development.

TEXT BOOKS:
1. **Object Oriented Programming through Java,** Universities Press, by P. Radha Krishna.
2. E. Balagurusamy, "*Programming with Java*", TataMc-Graw Hill, 5th Edition.

REFERENCES:
1. Herbert Schildt, "The complete reference Java", TataMc-Graw Hill, 7th Edition.

COURSE 7: OBJECT ORIENTED PROGRAMMING THROUGH JAVA

Practical   Credits: 1   2 hrs/week

List of Lab Experiments

1   Write a program to print Biggest of 3 Numbers using Logical Operators.
2   Write a program to Test the Prime number.
3   Write a program to create a Simple class to find out the Area and perimeter of rectangle and box using super and this keyword.
4   Write a program to design a class account using the inheritance and static that show all function of bank(withdrawal, deposit).
5   Write a program to design a class using abstract methods and classes.
6   Write a program to design a string class that perform string method (equal, reverse the string, change case).
7   Write a program to handle the exception using try and multiple catch block.
8   Write a program that import the user define package and access the member variable of classes that contained by package.
9   Write a program that show the implementation of interface.
10 Write a program to create a thread that implement the runable interface.
11 Write a program to draw the line, rectangle, oval, text using the graphics method.
12 Write a program to create menu using the frame.
13 Write a program to create dialog box.
14 Write a program to implement the flow layout and border layout.
15 Write a program to create Frame that display the student information.