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FOR
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SECOND YEAR DEGREE COURSE IN ELECTRONICS / ELECTRONICS & TELECOMMUNICATION ENGINEERING

Strictly According to New Revised Credit System Syllabus of Savitribai Phule Pune University
(w.e.f June 2016)

Mrs. SHILPA N. BHOSALE
ME. (Comp. Engg.)
Assistant Professor,
Comp. Engg. Deptt.,
NBN Sinhgad School of Engineering,
Ambegaon (Bk.), PUNE.

Mrs. PRITI P. JORVEKAR - KUMBHAR
ME. (Comp. Engg.)
Assistant Professor,
Comp. Engg. Deptt.,
NBN Sinhgad School of Engineering,
Ambegaon (Bk.), PUNE.

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Dedicated to …

My lovely daughter **'Devanshi'**.

…… Shilpa N. Bhosale

Dedicated to …

My beloved aunty Late. **Ms. Suman Durgadas Jorvekar**.

…… Priti P. Jorvekar

PREFACE

It gives us great pleasure in publishing this text book on "**Object Oriented Programming**" for the students of Second Year Degree Course in Electronics / Electronics & Telecommunication Engineering. This book is strictly written according to **New Revised Credit System Syllabus** of Savitribai Phule Pune University (2015 Pattern).

As per the policy of the University, Engineering Syllabi is revised every five years. Last revision was in the year 2012. New revision is coming little earlier, as university has introduced **Online System of Examination** from year 2012.

As per the **New Credit System**, the **Online Examinations** Phase–I will be conducted based on First & Second Units and Phase–II on Third & Fourth Units. The **Online** examinations will have objective types of questions with multiple choices. End Sem. Theory Examination will be based on all the six units and that will be conducted in traditional way and the Theory Course will have 4 credits.

It is our objective to keep the presentation systematic, consistent, intensive and clear presentation of concept through explanatory notes and figures. So we are sure that this book will cater for all your needs for this subject.

Main feature of this book is, **Complete Coverage** of the New Credit System Syllabus with large number of **Worked (Solved) Programs, Examples and Exercises.**

We have given Separate Book of Multiple Choice Questions (MCQ's) which will be very useful to the students especially for Online Examinations.

We would also like to thanks Dr. R. S. Prasad, Principal, NBN Sinhgad School of Engineering, Ambegaon (Bk) Pune, for their valuable guidance and timely reliving us for performing this task.

We take this opportunity to express our sincere thanks to Shri. Dineshbhai Furia, Shri. Jignesh Furia, Mrs. Nirali Verma and Shri. M. P. Munde and entire team of Nirali Prakashan namely Mrs. Deepali Lachake (Co-ordinator), who really have taken keen interest and untiring efforts in publishing this text.

The advice and suggestions of our esteemed readers to improve the text are most welcomed, and will be highly appreciated.

Pune **Authors**

SYLLABUS

Unit I : Introduction to Object Oriented Programming (6 Lectures)

Principles of OOP: Software crisis, Software evolution, OOP paradigm, Basic Concepts of OOP, Benefits & applications of OOP. Beginning with C++: What is C++, Applications of C++, A Simple C++ Program, More C++ statements. Moving from C to C++: Declaration of variable, Reference variables, Scope resolution operator, Member dereferencing operator, memory management operators. Functions in C++: Function prototyping, Call by reference.

Unit II : Concepts of Object Oriented Programming with C++ (6 Lectures)

Classes & Objects: Specifying a class, Defining member functions, A C++ program with class, Making an outside function inline, Nesting of member function, Private member function, Arrays within class, Member allocation for objects, Arrays of objects, Objects as function arguments. Constructors & Destructors: Constructors, Parameterized constructors, Multiple constructors in a class, Constructors with default arguments. Operator overloading concept: Use of operator overloading, defining operator overloading, Binary operator overloading. Introduction to Inheritance: Concept and types of Inheritance, Defining derived classes, Single inheritance, Making a private member inheritable, multilevel inheritance.

Unit III : Java Fundamentals (6 Lectures)

Evolution of Java, Comparison of Java with other programming languages, Java features, Java Environment, Simple Java Program, Java Tokens, Java Statements, Constants, variables, data types. Declaration of variables, Giving values to variables, Scope of variables, arrays, Symbolic constants, Typecasting, Getting values of variables, Standard default values, Operators, Expressions, Type conversion in expressions, Operator precedence and associativity, Mathematical functions, Control statements- Decision making & branching, Decision making & looping.

Unit IV : Classes, Methods and Objects in Java (6 Lectures)

Class Fundamentals, Declaring Objects, Assigning Object reference variables, Methods, Constructors, The This keyword, Garbage collection, finalize method, Overloading methods, using objects as parameters, Argument passing, returning objects, Recursion, access control, static, final, arrays, strings class, Command line arguments.

Unit V : Inheritance, Packages and Interfaces (6 Lectures)

Inheritance basics, Using Super, Creating Multilevel hierarchy, Constructors in derived class, Method overriding, Dynamic method dispatch, Using Abstract classes, Using final with inheritance, Object class, Packages, Access protection, Importing packages, Interfaces: Define, implement and extend. Default interface methods, Use static method in interface.

Unit VI : Multithreading, Exception handling and Applets (6 Lectures)

Introduction to multithreading: Introduction, Creating thread and extending thread class. Concept of Exception handling: Introduction, Types of errors, Exception handling syntax, Multiple catch statements. I/O basics, Reading console inputs, Writing Console output. Applets: Concepts of Applets, differences between applets and applications, life cycle of an applet, types of applets, creating a simple applet.

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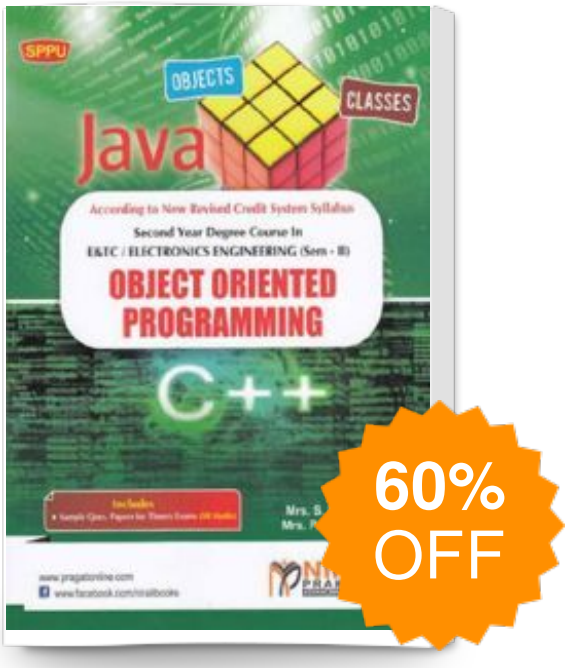
Object Oriented Programming



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Author : Mrs. Shilpa N. Bhosale, Mrs. Priti P. Jorvekar - Kumbhar