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Second Year Degree Course In
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Mrs. S. N. BHOSALE
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A TEXT BOOK OF

OBJECT ORIENTED PROGRAMMING

FOR
SEMESTER – II

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)

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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.

CONTENTS

Unit I : Introduction to Object Oriented Programming	1.1 – 1.42
1.1 Principles of OOP	1.1
1.1.1 Encapsulation	1.1
1.1.2 Abstraction	1.1
1.1.3 Inheritance	1.2
1.1.4 Polymorphism	1.2
1.2 Software Crisis	1.2
1.3 Software Evolution	1.3
1.4 OOP Paradigm	1.4
1.5 Basic Concepts of Object Oriented Programming	1.5
1.6 Benefits of Object Oriented Programming	1.9
1.7 Applications of Object Oriented Programming	1.10
1.8 Beginning with C++	1.10
1.8.1 What is C++?	1.10
1.8.2 Applications of C++	1.11
1.8.3 Syntax and Structure of C++ Program	1.12
1.8.4 How to Compile and Execute C++ Program ?	1.13
1.8.5 Comments	1.13
1.8.6 Uses of Classes	1.13
1.8.7 Cin: Extracting Input from User Using Keyboard	1.14
1.8.8 Cout: Display Output to User Using Screen (Monitor)	1.15
1.9 Moving from C to C++	1.16
1.9.1 Procedure Oriented Programming	1.16
1.9.2 Declaration of Variable	1.18
1.9.3 Scope of Variables	1.19
1.9.4 Reference Variables	1.20
1.9.5 Scope Resolution Operator in C++	1.22
1.9.6 Member Dereferencing Operator	1.26
1.9.7 Memory Management Operators	1.29

1.10	Functions in C++	1.34
1.10.1	Functions Prototype / Function Declarations	1.35
1.10.2	C++ Function Call by Reference	1.40
•	Exercise	1.42

Unit II : Concepts of Object Oriented Programming With C++		2.1 – 2.64
---	--	-------------------

2.1	Classes and Objects	2.1
2.1.1	Specifying a Class	2.1
2.1.2	Object	2.2
2.1.3	Defining Member Functions	2.2
2.1.4	A C++ Program with Class	2.5
2.1.5	C++ Inline Functions	2.6
2.1.6	Nesting of Member Function	2.8
2.1.7	Private Member Function	2.10
2.1.8	Arrays within Class	2.12
2.1.9	Memory Allocation for Objects	2.14
2.1.10	Array of Objects	2.18
2.1.11	Objects as Function Arguments	2.19
2.2	Constructors and Destructors	2.23
2.2.1	Constructors	2.23
2.2.2	Multiple Constructors in a Class	2.33
2.2.3	Constructors with Default Arguments	2.38
2.2.4	Destructors	2.39
2.3	Operator Overloading Concept	2.41
2.3.1	Operator Overloading	2.41
2.3.2	Overloading Binary Operators	2.43
2.4	Inheritance	2.45
2.4.1	Base Class	2.45
2.4.2	Derived Class	2.45
2.4.3	Member Access Control and Inheritance	2.46
2.4.4	Types of Inheritance	2.47
2.4.5	Making a Private Member Inheritable	2.62
•	Exercise	2.64

Unit III : Java Fundamentals**3.1 – 3.62**

3.1	Java	3.1
3.1.1	Where it is used?	3.1
3.1.2	Types of Java Applications	3.1
3.2	History of Java	3.2
3.2.1	Java Version History	3.3
3.3	C++ Vs Java	3.3
3.4	Java Features	3.4
3.5	Java Environment	3.7
3.5.1	Internal Architecture of JVM	3.8
3.6	Simple Java Program	3.9
3.6.1	Requirement for Hello Java Example	3.9
3.6.2	Creating Hello Java Example	3.10
3.6.3	Explanation of First Java Program	3.10
3.6.4	Internal Details of Hello Java Program	3.11
3.7	Java OOPs Concepts	3.13
3.8	Java Tokens	3.14
3.9	Java Statements	3.15
3.10	Constants	3.16
3.11	Variables	3.16
3.12	Data Types in Java	3.17
3.12.1	Primitive Data Types	3.18
3.12.2	User Defined Data Types	3.19
3.12.3	Differences between Primitive Data Types and User Defined Data Types	3.21
3.12.4	Signed Vs. Unsigned Data Type	3.21
3.13	Declaration of Variables	3.22
3.14	Giving Value to Variables	3.22
3.15	Scope of Variables	3.23
3.16	Array	3.26
3.16.1	Single Dimensional Array in Java	3.28
3.16.2	Multidimensional Array in Java	3.30
3.16.3	Alternative Array Declaration Syntax	3.32
3.17	Symbolic Constants	3.32
3.18	Typecasting	3.32

3.19	Standard Default Values	3.33
3.20	Operators	3.35
3.21	Expressions	3.41
3.22	Type Conversion in Expressions	3.42
3.23	Operator Precedence and Associativity	3.43
3.24	Mathematical Functions	3.45
3.25	Control Statement	3.47
	3.25.1 Selection Statements	3.47
	3.25.2 Iteration Statements	3.52
	3.25.3 Jump Statements	3.58
•	Exercise	3.62

Unit IV : Classes, Methods and Objects in Java	4.1 – 4.40
---	-------------------

4.1	Class Fundamentals	4.1
4.2	Declaring Objects	4.2
4.3	Class Vs Object	4.4
4.4	Assigning Object Reference Variables	4.4
4.5	Methods	4.5
4.6	Constructors	4.6
	4.6.1 Rules for Creating Constructor	4.6
	4.6.2 Types of Java Constructors	4.7
	4.6.3 Difference between Constructor and Method in Java	4.11
4.7	this Keyword	4.11
4.8	Garbage Collection	4.14
4.9	Finalize() Method	4.15
4.10	Overloading Methods	4.16
4.11	Using Objects as Parameters	4.18
4.12	Argument Passing	4.20
4.13	Returning Objects	4.22
4.14	Recursion	4.23
4.15	Access Control	4.25
4.16	Static	4.27
4.17	Final	4.28

4.18	Array	4.29
4.18.1	Single Dimensional Array in Java	4.31
4.18.2	Multidimensional Array in Java	4.33
4.18.3	Alternative Array Declaration Syntax	4.35
4.19	String Handling: String Class	4.35
4.19.1	String Methods	4.36
4.20	Command-Line Arguments	4.39
•	Exercise	4.40
Unit V : Inheritance, Packages and Interfaces		5.1 – 5.46
5.1	Inheritance Basics	5.1
5.1.1	Extends Keyword	5.1
5.1.2	Types of Inheritance	5.3
5.2	Member Access and Inheritance	5.15
5.2.1	Default (without an Access Modifier)	5.16
5.2.2	Protected	5.16
5.3	Super class Reference	5.17
5.4	Using Super	5.18
5.5	Constructors in Derived Class	5.21
5.6	Method Overriding	5.23
5.7	Dynamic Method Dispatch	5.26
5.8	Abstract Class	5.28
5.9	Using Final with Inheritance	5.29
5.9.1	Using Final to Prevent Overriding	5.29
5.9.2	Using Final to Prevent Inheritance	5.30
5.10	The Object Class	5.31
5.11	Packages	5.32
5.11.1	Advantage of Java Package	5.32
5.11.2	Defining a Package	5.32
5.11.3	Finding Packages and CLASSPATH	5.33
5.11.4	Access Protection	5.34
5.11.5	Importing Packages	5.35
5.12	Interfaces	5.36
5.12.1	Defining an Interface	5.36
5.12.2	Implementing Interfaces	5.37

5.12.3	Nested Interfaces	5.38
5.12.4	Extending Interfaces	5.40
5.12.5	Variables in Interfaces	5.41
5.13	Default Interface Methods	5.42
5.14	Use Static Method in Interface	5.45
•	Exercise	5.46

Unit VI : Multithreading, Exception Handling and Applets	6.1 – 6.58
---	-------------------

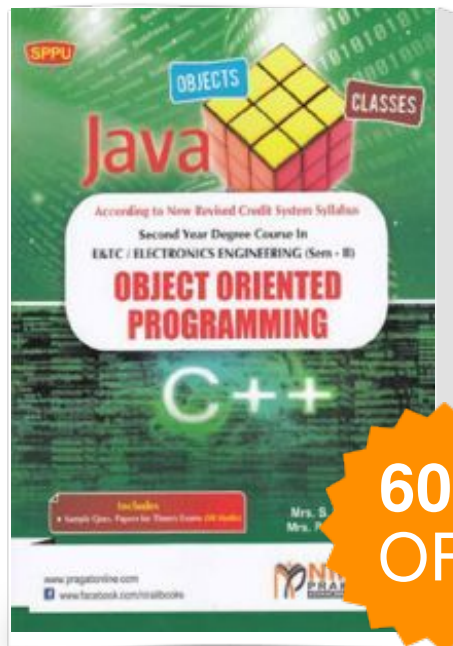
6.1	Introduction to Multithreading	6.1
6.1.1	The Main Thread	6.1
6.1.2	Life Cycle of a Thread	6.2
6.1.3	Thread Priorities	6.3
6.1.4	Create a Thread by Implementing a Runnable Interface	6.3
6.1.5	Create a Thread by Extending a Thread Class	6.6
6.1.6	Thread Methods	6.9
6.2	Concept of Exception Handling	6.10
6.2.1	Advantage of Exception Handling	6.10
6.2.2	Hierarchy of Java Exception Classes	6.11
6.3	Types of Exception	6.12
6.4	Uncaught Exceptions	6.14
6.5	Try Block	6.16
6.6	Catch Block	6.16
6.7	Throw Keyword	6.18
6.8	Throws Keyword	6.19
6.9	The Finally Block	6.21
6.10	Multiple Catch Blocks	6.27
6.11	Nested Try Statements	6.30
6.12	Built-in Exceptions	6.31
6.13	Custom Exception	6.33
6.14	I/O Basics: Stream	6.34
6.15	Byte Streams	6.37
6.16	Character Streams	6.39
6.17	Predefined Streams	6.40
6.18	Reading Console Input	6.40
6.19	Writing Console Output	6.41

6.20	Applet Fundamentals	6.43
6.20.1	The Applet Class	6.43
6.20.2	Invoking an Applet	6.44
6.21	Difference between Applet and Application Program	6.45
6.22	Life Cycle of Applet	6.46
6.23	Creating a Simple Applet	6.50
6.24	Requesting Repainting	6.52
6.25	Status Window	6.53
6.26	HTML Applet Tag	6.55
6.27	Passing Parameter to Applets	6.56
•	Exercise	6.58

• **Sample Question Papers for End Sem. Theory Examination** **P.1 – P.2**



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