

Dr. M. GUNASEKARAN



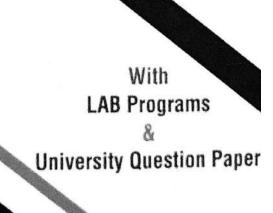
S. VADAMALAI

New Updated Syllabus

OBJECT ORIENTED PROGRAMMING WITH C++

For Second Year
III Semester B.Sc Computer Science & IV Semester BCA Students

As per the Latest Periyar University Syllabus



selvam publications

OBJECT ORIENTED PROGRAMMING WITH C++

For Second Year
III Semester B.Sc Computer Science &
IV Semester B.C.A Students
As per Latest **Periyar University** Syllabus

Dr. M. GUNASEKARAN, MCA., M.Phil., Ph.D.,

Assistant Professor & Head, Department of Computer Science, Government Arts College, Dharmapuri - 636809.

S. VADAMALAI, MCA., M.Phil., B.Ed.,

Assistant Professor,
Department of Computer Science,
Don Bosco College,
Dharmapuri - 636 705.

Included
University Question paper & Lab Programs



SELVAM PUBLICATIONS

(C) All Rights Reserved by the Publisher.

All right reserved. No part of this Book may be reproduced or transmitted in any form, or by any means, electronic or mechanical, including photocopying, recoding or by any information storage retrieval system, without permission in writing from the publisher.

First Edition: Jan 2019

Price Rs. 150/-

ISBN: 978-81-933878-0-1

G13910

1337 GUN

For copies please contact:

Selvam publications

201 / A, Arani Road | Chetpet, Tiruvannamalai Dist-606 801. Cell: 9500663495 | 9585975045

e-mail: selvampublications.com@gmail.com



S. Vadamalai received the M.Phil (Computer Science) from Vinayaka Mission University, M.C.A degree from Bharthiar University, B.Ed degree from Tamilnadu Education University and B.C.A degree from Periyar University.

He is currently working as Assistant Professor in the department of Computer Science at Don Bosco College, Dharmapuri with research and teaching experience of 10 years. Previously, he worked as Lecturer Kamadhenu college of Arts and Science, Dharmapuri. He has published articles National and international Journals. He has guided more than 20 PG students and 3 M.Phil research scholars. His research interest includes Data Mining and warehousing techniques such as cluster analysis, KDD.

CONTENTS

UNIT-1- Object Oriented Programming Concepts and Basics of C++

| 1.1 | Principles | 1.1 |
|-----|--|------|
| | 1.1.1 Software Cirsis | 1.1 |
| | 1.1.2 Software Evolution | 1.3 |
| | 1.1.3 Procedure Oriented Programming | 1.4 |
| | 1.1.4 Object - Oriented Programming Paradigm | 1.5 |
| | 1.1.5 Basic Concepts of Object Oriented Programmin | ng |
| | | 1.6 |
| | 1.1.6 Object- Oriented Languages | 1.9 |
| | 1.1.7 Introduction to C++ | 1.12 |
| | 1.1.8 Applications of C++ | 1.12 |
| | 1.1.9 Structure of C++ Program | 1.14 |
| 1.2 | Benefits of OOP | 1.18 |
| 1.3 | Applications of OOP | 1.18 |
| 1.4 | Tokens | 1.18 |
| 1.5 | Keywords | 1.19 |
| 1.6 | Identifiers and Constants | 1.19 |
| | 1.6.1 Identifiers | 1.19 |
| | 1.6.2 Constants | |
| 1.7 | Data Types | 1.20 |
| | 1.7.1 Basic Data types | 1.20 |
| | - 11 1/PCS | 1.20 |

| 1.7.2 User Defined Data Types | 1.22 |
|---------------------------------------|------|
| 1.7.3 Derived data types | 1.23 |
| 1.8 Constants | 1.24 |
| 1.9 Variables | 1.25 |
| 1.10 Operators In C++ | 1.27 |
| 1.10.1 Scope resolution operator | 1.27 |
| 1.10.2 Member Deferencing Operators | 1.28 |
| 1.10.3 Memory Management Operators | 1.28 |
| 1.11 Manipulators | 1.29 |
| 1.11.1 Type cast operator | 1.29 |
| 1.12 Expressions | 1.30 |
| 1.12.1 Special Assignment Expressions | 1.30 |
| 1.13 Control Structures | 1.31 |
| 1.13.1 Simple If structure | 1.32 |
| 1.13.2 If else statement | 1.34 |
| 1.13.3 Switch statement | 1.34 |
| 1.13.4 Do-while loop | 1.36 |
| 1.13.5 While loop | 1.37 |
| 1.13.6 For loop | 1.38 |
| UNIT-2- Functions and Classes | |
| 2.1 Function Prototyping | 2.2 |
| 2.2 Call By Reference | 2.4 |
| 2.3 Return By Reference | 2.5 |
| 2.4 Inline Functions | 2.5 |

| 2.5 Default Arguments | 2.6 |
|---|-------------------------------------|
| 2.6 Const Arguments | 2.7 |
| 2.7 Function Overloading | 2.7 |
| 2.8 Friend and Virtual Functions | 2.9 |
| 2.9 Introduction to Classes and Objects | 2.10 |
| 2.10 Class | 2.11 |
| 2.10.1 Creating objects | 2.12 |
| 2.10.2 Accessing class members | 2.14 |
| 2.11 Member Functions | 2.14 |
| 2.11.1 Outside the class definition | 2.15 |
| 2.11.2 Inside the class definition | 2.15 |
| 2.11.3 Making Outside Function Inline | 2.16 |
| 2.11.4 Nesting of Member Functions | 2.17 |
| 2.11.5 Private Member Function | 2.18 |
| 2.12 Array With in a Class | 2.19 |
| 2.13 Memory Allocation for Objects | 2.20 |
| 2.14 Static Data Members | 2.21 |
| 2.15 Static Member Functions | 2.22 |
| 2.16 Array of Objects | 2.23 |
| 2.17 Objects as Function Arguments | |
| 2.18 Friendly Functions | 2.24 |
| 2.19 Returning Objects | 2.262.28 |
| 2.20 Const Member Functions | 2.30 |
| 2.21 Pointers to Members | 2.32 |
| 2.22 Constructors and Destructors | 2.33 |

| | 2.22. | 1 Default Constructor | 2.35 | |
|---|-----------|---|---------------|--|
| | 2.22. | 2 Parameterized constructors | 2.36 | |
| | 2.22.3 | 3 Copy constructors | 2.37 | |
| | 2.22.4 | Multiple Constructors in a Class | 2.39 | |
| | 2.22.5 | Constructors with Default Arguments | 2.40 | |
| | 2.22.6 | 5 Dynamic Initialization of Objects | 2.40 | |
| | 2.22.7 | 7 Dynamic Constructors | 2.43 | |
| | 2.22.8 | 3 Destructors | 2.45 | |
| UNIT-3- Operator Overloading, Inheritance, Pointers And Virtual Functions | | | | |
| 3.1 | Operator | Overloading | 3.1 | |
| | 3.1.1 | Defining Operator Overloading | 3.2 | |
| | 3.1.2 | Overloading Unary Operators | 3.3 | |
| | 3.1.3 | Overloading Binary Operators | 3.5 | |
| | 3.1.4 | Overloading BinaryOperatorsUsingFriend Function | 3.8 | |
| | 3.1.5 | Rules for Overloading Operators | 3.9 | |
| 3.2 | Type Co | nversion | 3.10 | |
| | 3.2.1 | Conversion from Basic Type to Class Type | 3.11 | |
| - | 3.2.2 | Conversion from Class Type to Basic Type | 3.12 | |
| | 3.2.3 | Conversion from One Class Type to Another Type | Class 3.14 | |
| 3.3 | Introduct | ion to Inheritance:extending Classes | 3.16 | |
| 3.4 | Derived | Classes | 3.18 | |
| 3.5 | Single In | heritance | 3.20 | |

| 3.6 Multilevel Inheritance | 3.22 |
|---|------|
| 3.6.1 Making a Private Member Inheritable | 3.25 |
| 3.7 Multiple Inheritance | 3.28 |
| 3.8 Hierarchical Inheritance | 3.31 |
| 3.9 Hybrid Inheritance | 3.33 |
| 3.10 Virtual Base Classes | 3.36 |
| 3.11 Abstract Classes | 3.38 |
| 3.12 Constructors in Derived Class | 3.40 |
| 3.13 Member Classes: Nesting of Classes (Container Class) | |
| | 3.42 |
| 3.14 Introduction to Pointers, Virtual Functions and Polymorphism | 3.43 |
| 3.15 Pointers | 3.45 |
| 3.16 Pointers to Objects | 3.47 |
| 3.16.1 Array of Pointers to Objects | 3.48 |
| 3.17 this Pointer | 3.49 |
| 3.18 Pointers to Derived Class | 3.50 |
| 3.19 Virtual Function | 3.52 |
| 3.19.1 Rules for Virtual Functions | 3.52 |
| 3.20 Pure Virtual Function | 3.54 |
| UNIT-4- I/O Operations &Files | |
| 4.1 Introduction To Managing I/O Operations | 4.1 |
| 4.2 C++ Streams | 4.2 |
| 4.3 Stream Classes | 4.2 |
| 4.4 Unformatted Input/Output Operations: | 4.5 |

| 4.4.1 Overloaded Operators >> and<< | 4.5 |
|--|------|
| 4.4.2 Put () and Get () Functions | 4.6 |
| 4.4.3 Getline () and Write () Functions | 4.9 |
| 4.5 Formatted Console I/O Operations | 4.13 |
| 4.5.1 Defining Field Width: Width () | 4.14 |
| 4.5.2 Setting Precision: Precision () | 4.17 |
| 4.5.3 Filling and Padding: Fill () | 4.18 |
| 4.5.4 Formatting Fags, Bit Fields and Setf() | 4.18 |
| 4.6 Managing Output With Manipulators | 4.19 |
| 4.7 Introduction to Working with Files | 4.20 |
| 4.8. Classes for File Stream Operations | 4.22 |
| 4.9 Opening and Closing a File | 4.23 |
| 4.9.1 Opening Files Using Constructor | 4.24 |
| 4.9.2 Opening Files Using Open () | 4.26 |
| 4.10 Detecting End of File | 4.28 |
| 4.11 File Pointers and Manipulations | 4.29 |
| 4.11.1 Default Actions | 4.29 |
| 4.11.2 Functions for Manipulations of File Pointer | 4.29 |
| 4.11.3 Specifying the Offset | 4.30 |
| 4.12 Sequential Input and Output Operations | 4.32 |
| 4.12.1 Put() and Get() Functions | 4.33 |
| 4.12.2 Write () and Read () Functions | 4.34 |
| 4.13 Updating a File | 4.36 |
| 4.14 Error Handling During File Operations | 4.39 |
| 4.11 Command Line Arguments | 4.41 |

| UNIT-5- Templates and Exception Handling | | |
|---|-----------|--|
| 5.1 Introduction to Templates | 5.1 | |
| 5.2 Class Templates | 5.2 | |
| 5.3 Class Templates With Multiple Parameters | 5.7 | |
| 5.4 Function Templates | 5.8 | |
| 5.5 Function Templates With Multiple Parameters | 5.10 | |
| 5.6 Overloading of Template Functions | 5.11 | |
| 5.7 Member Function Templates | 5.12 | |
| 5.8 Non-Type Template Arguments | 5.14 | |
| 5.9 Introduction to Exception Handling | 5.15 | |
| 5.10 Basics of Exception Handling | 5.15 | |
| 5.11 Exception Handling Mechanism | 5.16 | |
| 5.12 Throwing Mechanism | 5.21 | |
| 5.13 Catching Mechanism | 5.22 | |
| 5.13.1 Multiple Catch Statements | 5.22 | |
| 5.13.2 Catch All Exceptions | 5.25 | |
| 5.14 Rethrowing an Exception | 5.27 | |
| 5.15 Specifying Exceptions | 5.28 | |
| | | |
| Important Two Marks & Lab Programs | TMLP.1-44 | |
| Periyar University Question Paper | 1-4 | |
| | | |
| | | |

*

Our Other Useful Books

- Computer Applications for Automation
- Programming in C
- Internet and its applications
- Fundamentals of Digital computers
- Structured System analysis Design
- Data Structures And Algorithms
- Relational Database Management System
- Operating Systems
- Object Oriented Programing with C++
- Web Technologies
- Problem Solving techniques
- Java Programming
- GUI Programming
- Computer networks
- Computer Graphics
- Multimedia
- Mobile Computing
- Datamining & Warehousing
- Digital fundamentals and Microprocessor
- System Administration and Maintenance
- Software Engineering



SELVAM PUBLICATIONS

#201/A Arani Road
Chetpet, Thiruvannamalai Dt- 606 801.
Cell: 9585975045 | 9500663495

