COMPUTER PROGRAMMING

COMPUTER PROGRAMMING

(For I Semester B.E/B.Tech.)

Dr. S. Kalarani M.E., Ph.D.

HOD & Associate Professor
Department of Information Technology
St. Joseph's Institute of Technology
OMR, Chennai – 600 119

Dr. J. Dafni Rose M.E., Ph.D.

HOD & Associate Professor
Department of Computer Science and Engineering
St. Joseph's Institute of Technology
OMR, Chennai – 600 119

Mr. K. Vijayakumar M.Tech., (Ph.D.)

Associate Professor
Department of Computer Science and Engineering
St. Joseph's Institute of Technology
OMR, Chennai – 600 119

McGraw Hill Education (India) Private Limited

NEW DELHI

McGraw Hill Education Offices

New Delhi New York St Louis San Francisco Auckland Bogotá Caracas
Kuala Lumpur Lisbon London Madrid Mexico City Milan Montreal
San Juan Santiago Singapore Sydney Tokyo Toronto

McGraw Hill Education (India) Private Limited

Published by McGraw Hill Education (India) Private Limited
P-24, Green Park Extension, New Delhi 110016

Computer Programming

This edition can be exported from India only by the publishers,
McGraw Hill Education (India) Private Limited

Print Edition
ISBN (13) : 978-**********
ISBN (10) : 9-**********

Specially prepared for St. Joseph's Group of Institutions, Chennai, Tamil Nadu
for circulation among its students and teachers.

Typeset at Print-O-World, 2568, Mandir Lane, Shadipur, New Delhi 110 008, and printed at

Cover Printer :

Visit us at: www.mheducation.co.in

PREFACE

In order to understand what it means to crack the books successfully, students must develop on the foundation of technical skills and have a sound understanding of the key elements. We have written this book to provide a framework for learning these necessary skills in a way that emphasizes the uniqueness of each concept as per the Anna University curriculum. When we look at the dynamics of C programming, it is easy to see why it can be a challenging topic to teach. Experience is what students need, yet this takes time. Until they get this experience, it is up to the teacher to provide them with the conceptual foundation and introduce them to the skills necessary for understanding and implementing successful programming. This text will help them tackle teaching challenges. Our main goal in writing this text is to describe and explain computer programming concepts.

This book uses realistic examples to help students get inside what programming is really like.

In addition to the examples, we have provided algorithms so that students can see the group process unfold.

This will help students distinguish between effective programming practices. This textbook has also defined computer programming in terms of five key elements such as programming logic, algorithm application, program identity, programming goals, and obtaining output that can be used to evaluate its effectiveness. This book is the result of many years of facilitating, researching, and teaching experience in computer programming. It is important to teach our students skills that are based in research from both the field of communication and other related disciplines.

Authors

ACKNOWLEDGEMENTS

Here is to all those people who helped us gather tiny drops of knowledge to create a mighty ocean.

Without the grace of the Almighty Lord, nothing is possible. We are truly indebted to him for having made this book tangible. The benevolent Dr B Babu Manoharan (MA, MBA, PhD), Managing Director of St. Joseph's Group of Institutions, was a fulcrum of support in writing this book.

We also wish to thank Mrs B Jessie Priya (MCom), Director, St. Joseph's Institute of Technology; Mr B Sashi Sekar (MSc, International Business), Chief Executive Officer, St. Joseph's Institute of Technology; and Mr B Jaikumar ChristhuRajan (BE, MBA), Director, St. Joseph's College of Engineering for buoying the feat.

We also extend our heartfelt gratitude to our Principal, Dr P Ravichandran (MTech, PhD) and Dr Vaddi Seshagiri Rao (MK, MBA, PhD), Principal, St. Joseph's College of Engineering for the invaluable assistance provided by them.

Thanks to McGraw Hill Education—without you this book would never have found its way to the realm.

We would like to express our obligation to our families who saw us through this book; to all those who provided support, talked things over, read, wrote, offered comments, allowed us to quote their remarks and assisted in the editing, proofreading, and design.

Authors

CONTENTS

UNIT – II: C PROGRAMMING BASICS

UNIT – III: ARRAYS AND STRINGS

UNIT – IV: FUNCTIONS AND POINTERS

UNIT – V: STRUCTURES AND UNIONS

SYLLABUS

COMPUTER PROGRAMMING

UNIT I: INTRODUCTION

Generation and Classification of Computers – Basic Organization of a Computer – Number System – Binary – Decimal – Conversion – Problems – Need for logical analysis and thinking – Algorithm – Pseudo code – Flow Chart.

UNIT II: C PROGRAMMING BASICS

Problems formulation – Problem Solving – Introductions to 'C' programming–fundamentals –structure of a 'C' program–compilation and linking processes–Constants, Variables–Data Types – Expressions using operators in 'C'–Managing Input and Output operations – Decision Making and Branching – Looping statements – Solving simple scientific and statitical problems.

UNIT III: ARRAYS AND STRINGS

Arrays – Initialization – Declaration – One dimensional and Two dimensional arrays. String-String operations – Strings Arrays. Simple programs-sorting searching – matrix operations.

UNIT IV: FUNCTIONS AND POINTERS

Functions – definition of functions – Declaration of function – Pass by value – Pass by reference – Recursion – Pointers – Definition – Initialization – Pointers arithmetic – Pointers and arrays – Example Problems.

UNIT V: STRUCTURES AND UNIONS

Introduction – need for structure data type – structure definition – structure declaration – Structure within a structure – Union – Programs using structures and Unions – Storage classes, Pre-processor directives.