**CHAPTER 1: *An Overview of Computers and Programming Languages***

Introduction

A Brief Overview of the History of Computers

Computer Components and Operations

Input

Processing

Output

Categories/Types of Computers

Elements of a Computer System

CPU

Main memory

Secondary storage

Input/Output devices

Computer software

System software

Application software

Operating systems

The Language of a Computers

Storage / Memory Sizes

Computer Programs

Computer program

Programming language

Low-level language

High-level language

Machine language

Assembly language

Procedural languages

Structured languages

Object-Oriented Programming (OOP) Languages

Nonprocedural Programming Languages

Visual Programming Languages

History of C++ Programming Language

Understanding the Programming Process

The Problem Analysis-Coding Execution Cycle

**Chapter 1a and 1b: *Using Pseudocode and Flowcharts***

Computer Components and Programs

Computer

Program or software

Programming Logic

Algorithm

Desk-checking

Flowchart / Pseudocode

Using Flowchart Symbols

**Chapter 2: *Basic Elements of C++***

Introduction: Computer Program / Programming / Programming language

A C++ Program

Processing a C++ Program: Editor / Preprocessor / Compiler / Linker / Loader / Execute

The Problem Analysis–Coding–Execution Cycle

The Basics of a C++ Program: Function / Syntax / Semantic rule

Comments: Single line / Multiple line

Whitespaces

Tokens

Special Symbols and Reversed Words

Identifiers

Data Types: Integral / Floating-point / Enumeration type

Arithmetic Operations

Order of Precedence

Expressions: Integral expression / Floating-point expression / Mixed expression

Type Conversions (Casting): Promotion / Typecasting / Implicit type coercion (promotion) / Cast operator (typecasting)

String Type

Input

Allocating Memory with Constants and Variables

Named constant

Variable

Putting Data into Variables

Assignment statement: Syntax/Assignment operator/Increment operator (++)/Decrement operator (--)/ Compound assignments/Pre-increment (++variable)/Post-increment(variable++)

Relational Operators

Logical Operations

Order of Precedence of Common Operators

Input (Read) statement: stream extraction operator

Output: stream insertion operator/manipulator/escape sequences

Preprocessor Directives: header file

Creating a C++ Program

A Quick Look at a C++ Program

Prevent the Console from Closing

Program Style and Form

Use of Whitespaces

Form and Style

Documentation

Prompt Lines

Naming Identifiers: self-documenting/run-together words

Use of Semicolons, Brackets, and Commas

Debugging - Understanding and Fixing Syntax

Errors

Syntax

Semantics

Example: Convert Length

Example: Make Change

Exercises with Numbers

Exercises with Strings

**Chapter 3: *Input/Output***

I/O Streams and Standard I/O Devices

Stream/Input Stream/Output Stream/Iostream

cin and the Extraction Operator >>

Using Predefined Functions in a Program

Function (Subprogram)/main/Predefined functions (header files)

cin and the get Function

cin and the ignore Function

cin and the putback Function

cin and the peek Functions

Input Failure

Input for the string Type:

The function getline

Exercises with Strings

Output and Formatting Output

setprecision Manipulator

fixed and scientific Manipulator

Setting and Resetting Manipulators

showpoint Manipulator

setw Manipulator

setfill Manipulator

left and right Manipulators

Types of Manipulators: Parameterized/Nonparameterized

File Input/Output

Exercises With Files

Using Extended ASCII characters

Exercises With Files