3.2.a if-else Statement 23
3.2.b Nesting if-else Statement 28
3.2.c switch Statement 33
3.3 Iteration Statements (looping) 36
3.3.a for Statement 36
3.3.b Nested for loop 47
3.3.c while Statement 59
3.3.d do-while Statement 62
3.3.e Jump Statements 64

4. Array 73
4.1 Array 73
4.2 Advantages and Disadvantages of Array 74
4.3 Sorting and Searching 78
4.3.a Bubble Sort 78
4.3.b Selection Sort 83
4.3.c Sequential Search 86
4.4 Inter Conversion in Number System Using Array 88
4.5 Multi-dimensional Arrays 95

5. String 104
5.1 Declaring and Initializing String Variable 104
5.1.a Reading a String from Terminal 105
5.1.b Writing of a String 106
5.2 Standard Library String Functions 107
5.3 String Manipulation Functions 108
5.4 Some More String Functions 120
5.5 Character Handling Library Functions 121

6. Functions 122
6.1 Functions 122
6.2 Use of Function 123
6.3 Categories of Function 123
6.3.a Function with No Argument and No Return Value or Empty Parameters List 123
6.3.b Function with Arguments and No Return Value 124
6.3.c Function with Arguments and Return Values 126
6.3.d Function with No Arguments But a Return Values 129
6.4 Function Calls 129
6.4.a Call by Value 130
6.4.b Call by Reference 131
6.5 Calling Functions with Arrays 132
6.6 Recursive Function 134

7. Structures, Union and Bitfields 137
7.1 Defining a Structure 137
7.2 Further Uses of Structures 138
7.3 Features of a Structure 138
7.4 Comparison of Array and Structure 139
7.5 Different Forms of Declaring a Structure 139
7.6 Array of Structure 144
7.7 Structure of Structures 146
7.8 Pointer to a Structure 148
7.9 Unions 150
7.10 Features of Union 150
7.11 Comparison of Structure and Union 151
7.12 Uses of Union Data Type 151
7.13 Bit Fields 151
7.14 Limitations of Bit Fields 152
7.15 Uses of Structure 153

8. Pointer 155
8.1 Definition 155
8.2 Pointer Variable Declaration 155
8.3 Pointer Operators 156
8.4 Pointer Arithmetic 157
8.5 Pointers and Arrays 157
8.6 Array of Pointer 160
8.7 Constant Pointer 165
8.8 Pointer and Function Argument 165
8.9 Pointers to a Function 166
8.10 Pointer to Pointer 167
8.11 Pointer and Structure 168
8.12 NULL Pointer 170
8.13 Dynamic Memory Allocation 170
  8.13.a Malloc 170
  8.13.b Alloc 172
  8.13.c Free function 174
  8.13.d Realloc 174
8.14 Important Information 175
9. Console and Files
  9.1 Console I/O Function
  9.2 Formatted Console I/O
  9.3 Using a Scanset
  9.4 Unformatted Console I/O
  9.5 File
    9.5.1 Opening Files
    9.5.2 Closing a File (Flushing the Buffer)
    9.5.3 File-Handling Functions
    9.5.4 Error Handling
  9.6 Command Line Arguments

10. Number System
  10.1 Introduction
  10.2 Bases of Different System
  10.3 Conversion Table
  10.4 Conversion of Decimal Number to Binary Number
  10.5 Conversion of Decimal Fraction to Binary Number
  10.6 Number having Integral and Fractional Parts Both
  10.7 Conversion of Binary Number to Decimal Number
  10.8 Conversion of Decimal Number to Octal Number
  10.9 Conversion of Decimal Number to Hexadecimal Number
  10.10 Conversion of Decimal Fraction to Hexadecimal System
  10.11 Conversion of Binary Number to Octal and Hexadecimal Number or
       Octal to Hexadecimal Number and Vice-versa
  10.12 Binary Coded Decimal (BCD) Codes
  10.13 BCD Code for Hexadecimal System
  10.14 Conversion of a Binary Number to a Hexadecimal Number Using BCD Code
  10.15 Conversion of a Hexadecimal Number to Binary Number Using BCD Code
  10.16 BCD Code for Octal Number System
  10.17 Conversion of Octal Number to Binary Number Using BCD Code
  10.18 Conversion of Hexadecimal Number to Octal Using BCD Code
  10.19 Conversion of Octal to Hexadecimal Using BCD Code
  10.20 Addition of Two Binary Numbers
  10.21 Subtraction of Two Binary Numbers
  10.22 Use of Complements to Represent Negative Number and
      Changing the Subtraction to Addition
  10.23 Finding 1’s and 2’s Complement