

Programming Basics Using C Language

Training Courseware for ICS Class XII

Inside

- Introduction to C Language
- Basic Structure of C Program
- Variables in C
- Operators in C
- Control Flow with Control Statements
- Importance and use of Functions
- Handling Files in C

Based on Intermediate Computer Sciences Class XII Curriculum

Intermediate Computer Science (ICS)

**Programming Basics
Using C Language
for
Class XII**

By

Computer Literacy and Information Technology Institute

?

CONTENTS

INTRODUCTION	1
WELCOME TO C	1
COURSE OBJECTIVES	2
PRACTICAL EXERCISES	3
FEATURES OF C	4
THE HISTORY OF C	5
STANDARD C VS. K&R C	7
A C PROGRAM	8
THE FORMAT OF C	9
ANOTHER EXAMPLE	10
VARIABLES	11
PRINTF AND SCANT	12
INTEGER TYPES IN C	13
INTEGER EXAMPLE	14
CHARACTER EXAMPLE	15
INTEGERS WITH DIFFERENT BASES	16
REAL TYPES IN C	17
REAL EXAMPLE	18
CONSTANTS	19
WARNING!	20
NAMED CONSTANTS	21
PREPROCESSOR CONSTANTS	22
TAKE CARE WITH PRINTF AND SCANT!	23
INTRODUCTION PRACTICAL EXERCISES	25
INTRODUCTION SOLUTIONS	27
OPERATORS IN C	29
OPERATORS IN C	29
ARITHMETIC OPERATORS	30
USING ARITHMETIC OPERATORS	31
THE CAST OPERATOR	32
INCREMENT AND DECREMENT	33
PREFIX AND POSTFIX	34
TRUTH IN C	35
COMPARISON OPERATORS	36
LOGICAL OPERATORS	37
LOGICAL OPERATOR GUARANTEES	38
WARNING!	39
BITWISE OPERATORS	40
BITWISE EXAMPLE	41
ASSIGNMENT	42
WARNING!	43
OTHER ASSIGNMENT OPERATORS	44
SIZEOF OPERATOR	45
CONDITIONAL EXPRESSION OPERATOR	46
PRECEDENCE OF OPERATORS	47
ASSOCIATIVITY OF OPERATORS	48

PRECEDENCE/ASSOCIATIVITY TABLE	49
OPERATORS IN C PRACTICAL EXERCISES	51
OPERATORS IN C SOLUTIONS	53
CONTROL FLOW	57
CONTROL FLOW	57
DECISIONS IF THEN	58
WARNING!	59
IF THEN ELSE	60
NESTING IF'S	61
SWITCH	62
MORE ABOUT SWITCH	63
A SWITCH EXAMPLE	64
WHILE LOOP	65
(ANOTHER) SEMICOLON WARNING!	66
WHILE, NOT UNTIL!	67
DO WHILE	68
FOR LOOP	69
FOR IS NOT UNTIL EITHER!	70
STEPPING WITH FOR	71
EXTENDING THE FOR LOOP	72
BREAK	73
CONTINUE	74
SUMMARY	75
CONTROL FLOW PRACTICAL EXERCISES	77
CONTROL FLOW SOLUTIONS	79
FUNCTIONS	85
FUNCTIONS	85
THE RULES	86
WRITING A FUNCTION - EXAMPLE	87
CALLING A FUNCTION - EXAMPLE	88
CALLING A FUNCTION - DISASTER!	89
PROTOTYPES	90
PROTOTYPING IS NOT OPTIONAL	91
WRITING PROTOTYPES	92
TAKE CARE WITH SEMICOLONS	93
EXAMPLE PROTOTYPES	94
EXAMPLE CALLS	95
RULES OF VISIBILITY	96
CALL BY VALUE	97
CALL BY VALUE - EXAMPLE	98
C AND THE STACK	99
STACK EXAMPLE	100
STORAGE	101
AUTO	102
STATIC	103
REGISTER	104
GLOBAL VARIABLES	105

FUNCTIONS PRACTICAL EXERCISES	107
FUNCTIONS SOLUTIONS	109
HANDLING FILES IN C	115
HANDLING FILES IN C	115
INTRODUCTION	116
STREAMS	117
WHAT IS A STREAM?	118
WHY STDOUT AND STDERR?	119
STDIN IS LINE BUFFERED	121
OPENING FILES	122
DEALING WITH ERRORS	123
FILE ACCESS PROBLEM	124
DISPLAYING A FILE	125
EXAMPLE - COPYING FILES	126
CONVENIENCE PROBLEM	128
ACCESSING THE COMMAND LINE	129
USEFUL ROUTINES	131
BINARY FILES	134
SUMMARY	139
HANDLING FILES IN C PRACTICAL EXERCISES	141
HANDLING FILES IN C SOLUTIONS	143
APPENDICES	155
PRECEDENCE AND ASSOCIATIVITY OF C OPERATORS:	155
SUMMARY OF C DATA TYPES	156
MAXIMA AND MINIMA FOR C TYPES	157
PRINTF FORMAT SPECIFIERS	158
TABLE OF ESCAPE SEQUENCES	159
ASCII TABLE	160