Fundamentals of Microcomputer Programming

21	0041	5C	SZ	INCB	Take:	PUT
22	0042	58		ASLB		PUT
23	0043	TOAE	85	LDY	B,X	PUT
24	0046	10AC	86	DURY	A, X	Z(J)
25	0049	20		BGE	53	
26				Moss	4	200
27	4B		86	LA TO	REA.X	EXCH.
001.	542 71	TOAF	80	STY	A.A	
NA	C	EFU [80		9	
20	0052	54	S3	ISRR		
2	0052	DI	00	CMPB	N	
C.	0000	D.1	00	Oldi D		

T. J. WAGNER

University of Texas at Austin

G. J. LIPOVSKI

University of Texas at Austin

SEMINAR LIBRARY

Department of Computer Science

UNIVERSITY OF KARACHI

2 - 6-94

FUNDAMENTALS OF MICROCOMPUTER PROGRAMING

Macmillan Publishing Company

New York

Collier Macmillan Publishers

London

CONTENTS

1	BA	SIC COMPUTER STRUCTURE AND THE MC6809	1
	1-1	Basic Computer Structure	2
	1-2	The Instruction	6
	1-3	A Few Instructions and Some Simple Programs	12
	1-4	Summary and Further Reading	19
		Problems	20
2	AD	DRESSING	23
	2-1	Levels of Addressing	24
	2-2	Index Addressing Modes	31
	2-3	Relative Addressing and Position Independence	39
	2-4	Examples	42
	2-5	Architectural Notions of Addressing	48
	2-6	Summary	50
		Problems	51

3 THE INSTRUCTION SET	55
3.2 Move Instructions	56
2.7 Arithmetic Instructions	61
3, 3 Logic Instructions	66
3-4 Edit Instructions	69
3-5 Control Instructions	71
3-4 Imput/Output Instructions	76
3-7 More Examples	77
3-8 Remarks	82
Problems	83
ASSEMBLY LANGUAGE FOR THE MC6809	89
4-1 Introductory Example and Assembler Printout	91
4-2 Assembler Directives	95
4-3 Mechanics of a Two-Pass Assembler	104
4-4 Assemblers, Louders, Compilers, Interpreters, and Macros	117
4-5 Summary	127
Problems	127
5 SUBROUTINES	135
5-1 Local Variables	137
5-2 Passing Parameters	151
5-3 Passing Arguments by Value, Reference, and Name	168
5-4 Calling and Returning Mechanisms	170
5-5 Reentrant and Recursive Subroutines	181
5-6 Testing	183
5-7 Documentation	188
5-8 Further Examples and Discussion on Subroutines	190
5-9 Summary and Further Reading	201
Problems	201
A Patentino	
6 ELEMENTARY DATA STRUCTURES	209
6-1 What a Data Structure Is	210
6-2 Indenable Data Structures	212
6-3 Sequential Data Structures	218
6-4 Linked List Structures	226
6-5 Summary and Further Reading	232
Problems	233
S Particulate	(A)

ARITHMETIC OPERATIONS		230
7-1	Integer Conversion	239
9.2		240
7.3	Control of the contro	249
7-4	From Formulas to Subroutine Calls	258
7-5		269 276
	Problems	276
INF	281	
8-1	Input and Output Hardware	282
8-2	The Use of Buffers with Input and Output	288
8-3	Integrated Circuit Chips for Input/Output Devices	290
8-4	Synchronization Mechanisms	294
8-5	Summary and Further Reading	309
	Problems	310
OTI	HER MICROCOMPUTERS	313
9-1	The MC6801	314
9-2	The MC6800	321
9-3	The MC6805	326
9-4	The MC68000	331
9-5	Selecting a Microprocessor for an Application	341
9-6	Summary	343
3-0	Problems	344
APPENDICES		
	APPENDIX 1: Number Representations and	
	Binary Arithmetic	347
	APPENDIX 2: Instruction Set Summary	353
	APPENDIX 3: Floating-point Subroutines	366
	APPENDIX 4: Using the TRS-80 Color Computer	380
	Index	385