
APPENDIX A

Two's compliment table

* -128	10000000	&80	*	-64	11000000	&C0	*	0	00000000	&10	*	64	01000000	&40	*
* -127	10000001	&81	*	-63	11000001	&C1	*	1	00000001	&11	*	65	01000001	&41	*
* -126	10000010	&82	*	-62	11000010	&C2	*	2	00000010	&12	*	66	01000010	&42	*
* -125	10000011	&83	*	-61	11000011	&C3	*	3	00000011	&13	*	67	01000011	&43	*
* -124	10000100	&84	*	-60	11000100	&C4	*	4	00000100	&14	*	68	01000100	&44	*
* -123	10000101	&85	*	-59	11000101	&C5	*	5	00000101	&15	*	69	01000101	&45	*
* -122	10000110	&86	*	-58	11000110	&C6	*	6	00000110	&16	*	70	01000110	&46	*
* -121	10000111	&87	*	-57	11000111	&C7	*	7	00000111	&17	*	71	01000111	&47	*
* -120	10001000	&88	*	-56	11001000	&C8	*	8	00001000	&18	*	72	01001000	&48	*
* -119	10001001	&89	*	-55	11001001	&C9	*	9	00001001	&19	*	73	01001001	&49	*
* -118	10001010	&8A	*	-54	11001010	&CA	*	10	00001010	&1A	*	74	01001010	&4A	*
* -117	10001011	&8B	*	-53	11001011	&CB	*	11	00001011	&1B	*	75	01001011	&4B	*
* -116	10001100	&8C	*	-52	11001100	&CC	*	12	00001100	&1C	*	76	01001100	&4C	*
* -115	10001101	&8D	*	-51	11001101	&CD	*	13	00001101	&1D	*	77	01001101	&4D	*
* -114	10001110	&8E	*	-50	11001110	&CE	*	14	00001110	&1E	*	78	01001110	&4E	*
* -113	10001111	&8F	*	-49	11001111	&CF	*	15	00001111	&1F	*	79	01001111	&4F	*
* -112	10010000	&90	*	-48	11010000	&D0	*	16	00010000	&20	*	80	01010000	&50	*
* -111	10010001	&91	*	-47	11010001	&D1	*	17	00010001	&21	*	81	01010001	&51	*
* -110	10010010	&92	*	-46	11010010	&D2	*	18	00010010	&22	*	82	01010010	&52	*
* -109	10010011	&93	*	-45	11010011	&D3	*	19	00010011	&23	*	83	01010011	&53	*
* -108	10010100	&94	*	-44	11010100	&D4	*	20	00010100	&24	*	84	01010100	&54	*
* -107	10010101	&95	*	-43	11010101	&D5	*	21	00010101	&25	*	85	01010101	&55	*
* -106	10010110	&96	*	-42	11010110	&D6	*	22	00010110	&26	*	86	01010110	&56	*
* -105	10010111	&97	*	-41	11010111	&D7	*	23	00010111	&27	*	87	01010111	&57	*
* -104	10011000	&98	*	-40	11011000	&D8	*	24	00011000	&28	*	88	01011000	&58	*
* -103	10011001	&99	*	-39	11011001	&D9	*	25	00011001	&29	*	89	01011001	&59	*
* -102	10011010	&9A	*	-38	11011010	&DA	*	26	00011010	&2A	*	90	01011010	&5A	*
* -101	10011011	&9B	*	-37	11011011	&DB	*	27	00011011	&2B	*	91	01011011	&5B	*
* -100	10011100	&9C	*	-36	11011100	&DC	*	28	00011100	&2C	*	92	01011100	&5C	*
* -99	10011101	&9D	*	-35	11011101	&DD	*	29	00011101	&2D	*	93	01011101	&5D	*
* -98	10011110	&9E	*	-34	11011110	&DE	*	30	00011110	&2E	*	94	01011110	&5E	*
* -97	10011111	&9F	*	-33	11011111	&DF	*	31	00011111	&2F	*	95	01011111	&5F	*
* -96	10100000	&A0	*	-32	11100000	&E0	*	32	00100000	&30	*	96	01100000	&60	*
* -95	10100001	&A1	*	-31	11100001	&E1	*	33	00100001	&31	*	97	01100001	&61	*
* -94	10100010	&A2	*	-30	11100010	&E2	*	34	00100010	&32	*	98	01100010	&62	*
* -93	10100011	&A3	*	-29	11100011	&E3	*	35	00100011	&33	*	99	01100011	&63	*
* -92	10100100	&A4	*	-28	11100100	&E4	*	36	00100100	&34	*	100	01100100	&64	*
* -91	10100101	&A5	*	-27	11100101	&E5	*	37	00100101	&35	*	101	01100101	&65	*
* -90	10100110	&A6	*	-26	11100110	&E6	*	38	00100110	&36	*	102	01100110	&66	*
* -89	10100111	&A7	*	-25	11100111	&E7	*	39	00100111	&37	*	103	01100111	&67	*

* -88	10101000	&A8	*	-24	11101000	&E8	*	40	00101000	&28	*	104	01101000	&68	*
* -87	10101001	&A9	*	-23	11101001	&E9	*	41	00101001	&29	*	105	01101001	&69	*
* -86	10101010	&AA	*	-22	11101010	&EA	*	42	00101010	&2A	*	106	01101010	&6A	*
* -85	10101011	&AB	*	-21	11101011	&EB	*	43	00101011	&2B	*	107	01101011	&6B	*
* -84	10101100	&AC	*	-20	11101100	&EC	*	44	00101100	&2C	*	108	01101100	&6C	*
* -83	10101101	&AD	*	-19	11101101	&ED	*	45	00101101	&2D	*	109	01101101	&6D	*
* -82	10101110	&AE	*	-18	11101110	&EE	*	46	00101110	&2E	*	110	01101110	&6E	*
* -81	10101111	&AF	*	-17	11101111	&EF	*	47	00101111	&2F	*	111	01101111	&6F	*
* -80	10110000	&B0	*	-16	11110000	&F0	*	48	00110000	&30	*	112	01110000	&70	*
* -79	10110001	&B1	*	-15	11110001	&F1	*	49	00110001	&31	*	113	01110001	&71	*
* -78	10110010	&B2	*	-14	11110010	&F2	*	50	00110010	&32	*	114	01110010	&72	*
* -77	10110011	&B3	*	-13	11110011	&F3	*	51	00110011	&33	*	115	01110011	&73	*
* -76	10110100	&B4	*	-12	11110100	&F4	*	52	00110100	&34	*	116	01110100	&74	*
* -75	10110101	&B5	*	-11	11110101	&F5	*	53	00110101	&35	*	117	01110101	&75	*
* -74	10110110	&B6	*	-10	11110110	&F6	*	54	00110110	&36	*	118	01110110	&76	*
* -73	10110111	&B7	*	-9	11110111	&F7	*	55	00110111	&37	*	119	01110111	&77	*
* -72	10111000	&B8	*	-8	11111000	&F8	*	56	00111000	&38	*	120	01111000	&78	*
* -71	10111001	&B9	*	-7	11111001	&F9	*	57	00111001	&39	*	121	01111001	&79	*
* -70	10111010	&BA	*	-6	11111010	&FA	*	58	00111010	&3A	*	122	01111010	&7A	*
* -69	10111011	&BB	*	-5	11111011	&FB	*	59	00111011	&3B	*	123	01111011	&7B	*
* -68	10111100	&BC	*	-4	11111100	&FC	*	60	00111100	&3C	*	124	01111100	&7C	*
* -67	10111101	&BD	*	-3	11111101	&FD	*	61	00111101	&3D	*	125	01111101	&7D	*
* -66	10111110	&BE	*	-2	11111110	&FE	*	62	00111110	&3E	*	126	01111110	&7E	*
* -65	10111111	&BF	*	-1	11111111	&FF	*	63	00111111	&3F	*	127	01111111	&7F	*

APPENDIX B

This gives all the assembler commands on the 6502 processor and the op-codes of each command.

COMMAND		OP-CODE	(IND),Y			Z,Y			SEC IMP		
			Z,X	D1		ABS,Y	B6		SED IMP	F8	
ADC	IMM	69	ABS,X	D5	LDY	IMM	BE		SEI IMP	78	STA ABS
	ABS	6D	ABS,Y	DD		ABS	AC			8D	
	Z	65	CPX IMM	E0		Z	A4		Z	85	
	(IND,X)	61	ABS	EC	LSR	Z,X	B4		(IND,X)	81	
	(IND),Y	71	Z	E4		ABS,X	BC		(IND),Y	91	
	Z,X	75	CPY IMM	C0		ABS	4E		Z,X	95	
	ABS,X	7D	ABS	CC		Z	46		ABS,X	9D	
	ABS,Y	79	Z	C4		A	4A		ABS,Y	99	
	AND IMM	29	DEC ABS	CE		Z,X	56		STX ABS	8E	
	ABS	2D	Z	C6		ABS,X	5E		Z	86	
	Z	25	Z,X	D6		NOP IMP	EA		Z,Y	96	
	(IND,X)	21	ABS,X	DE		ORA IMM	09		STY ABS	8C	
	(IND),Y	31	DEX IMP	CA		ABS	0D		Z	84	
AND	Z,X	35	DEY IMP	88	NOP	(IND,X)	01		Z,Y	96	STY ABS
	ABS,X	3D	EOR IMM	49		(IND),Y	11		Z	84	
	ABS,Y	39	ABS	4D		Z,X	15		Z,X	94	
	ASL ABS	0E	Z	45		ABS,X	1D		TAX IMP	AA	
	Z	06	(IND,X)	41		ABS,Y	19		TAY IMP	A8	
	A	0A	(IND),Y	51		PHA IMP	48		TSX IMP	BA	
	Z,X	16	Z,X	55		PHP IMP	08		TXA IMP	8A	
	ABS,X	1E	ABS,X	5D		PLA IMP	68		TXS IMP	9A	
	BCC REL	90	ABS,Y	59		PLP IMP	28		TYA IMP	98	
	BCS REL	B0	INC ABS	EE		ROL ABS	2E				
BEQ	REL	F0	Z	E6	ROR	Z	26				
	BIT ABS	2C	Z,X	F6		A	2A				
	Z	24	ABS,X	FE		Z,X	36				
	BMI REL	30	INX IMP	E8		ABS,X	3E				
	BNE REL	D0	INY IMP	C8		ABS	6E				
	BPL REL	10	JMP ABS	4C		Z	66				
	BRK IMP	00	IND	6C		A	6A				
	BVC REL	50	JSR ABS	20		Z,X	76				
	BVS REL	70	LDA IMM	A9		ABS,X	7E				
	CLC IMP	18	ABS	AD	RTI	IMP	40				
CLD	IMP	D8	Z	A5		RTS IMP	60				
	CLI IMP	58	(IND,X)	A1		SBC IMM	E9				
	CLV IMP	B8	(IND),Y	B1		ABS	ED				
	CMP IMM	C9	Z,X	B5		Z	E5				
	ABS	CD	ABS,X	BD		(IND,X)	E1				
	Z	C5	ABS,Y	B9		(IND),Y	F1				
	(IND,X)	C1	LDX IMM	A2		Z,X	F5				
			ABS	AE		ABS,X	FD				
			Z	A6		ABS,Y	F9				

APPENDIX C

This gives all the op-codes and the assembler commands they represent.

00	BRK	IMP	32	-	64	-	96	STX	Z,Y
01	ORA	(IND,X)	33	-	65	ADC	Z	97	-
02	-		34	-	66	ROR	Z	98	TYA
03	-		35	AND	Z,X	67	-	99	STA
04	-		36	ROL	Z,X	68	PLA	IMP	9A
05	ORA	Z	37	-	69	ADC	IMM	9B	-
06	ASL	Z	38	SEC	IMP	6A	ROR	A	9C
07	-		39	AND	ABS,Y	6B	-	9D	STA
08	PHP	IMM	3A	-	6C	JMP	IND	9E	-
09	ORA	IMM	3B	-	6D	ADC	ABS	9F	-
0A	ASL	A	3C	-	6E	ROR	ABS		
0B	-		3D	AND	ABS,X	6F	-	A0	LDY
0C	-		3E	ROL	ABS,X			A1	LDA
0D	ORA	ABS	3F	-	70	BVS	REL	A2	LDX
0E	ASL	ABS			71	ADC	(IND),Y	A3	-
0F	-		40	RTI	IMP	72	-	A4	LDY
			41	EOR	(IND,X)	73	-	A5	LDA
10	BPL	REL	42	-	74	-		A6	LDX
11	ORA	(IND),Y	43	-	75	ADC	Z,X	A7	-
12	-		44	-	76	ROR	Z,X	A8	TAY
13	-		45	EOR	Z	77	-	A9	LDA
14	-		46	LSR	Z	78	SEI	IMP	AA
15	ORA	Z,X	47	-	79	ADC	ABS,Y	AB	-
16	ASL	Z,X	48	PHA	IMP	7A	-	AC	LDY
17	-		49	EOR	IMM	7B	-	AD	LDA
18	CLC	IMP	4A	LSR	A	7C	-	AE	LDX
19	ORA	ABS,Y	4B	-	7D	ADC	ABS,X	AF	-
1A	-		4C	JMP	ABS	7E	ROR	ABS,X	
1B	-		4D	EOR	ABS	7F	-		
1C	-		4E	LSR	ABS			B0	BCS
1D	ORA	ABS,X	4F	-	80	-		B1	LDA
1E	ASL	ABS,X			81	STA	(IND,X)	B2	-
1F	-		50	BVC	REL	82	-	B3	-
			51	EOR	(IND),Y	83	-	B4	LDY
20	JSR	ABS	52	-	84	STY	Z	B5	LDA
21	AND	(IND,X)	53	-	85	STA	Z	B6	LDA
22	-		54	-	86	STX	Z	B7	-
23	-		55	EOR	Z,X	87	-	B8	CLV
24	BIT	Z	56	LSR	Z,X	88	DEY	IMP	B9
25	AND	Z	57	-	89	-		BA	TSX
26	ROL	Z	58	CLI	IMP	8A	TXA	IMP	BB
27	-		59	EOR	ABS,Y	8B	-	BC	LDY
28	PLP	IMP	5A	-	8C	STY	ABS	BD	LDA
29	AND	IMM	5B	-	8D	STA	ABS	BE	LDX
2A	ROL	A	5C	-	8E	STX	ABS	BF	-
2B	-		5D	EOR	ABS,X	8F	-	C0	CPY
2C	BIT	ABS	5E	LSR	ABS,X	90	BCC	REL	C1
2D	AND	ABS	5F	-	91	STA	(IND),Y	C2	-
2E	ROL	ABS	60	RTS	IMP	92	-	C3	-
2F	-		61	ADC	(IND,X)	93	-	C4	CPY
30	BMI	REL	62	-	94	STY	Z,X	C5	CMP
31	AND	(IND),Y	63	-	95	STA	Z,X	C6	DEC
								C7	-

C8	INY	IMP	D6	DEC	Z,X	E4	CPX	Z	F2	-
C9	CMP	IMM	D7	-		E5	SBC	Z	F3	-
CA	DEX	IMP	D8	CLD	IMP	E6	INC	Z	F4	-
CB	-		D9	CMP	ABS,Y	E7	-		F5	SBC Z,X
CC	CPY	ABS	DA	-		E8	INX	IMP	F6	INC Z,X
CD	CMP	ABS	DB	-		E9	SBC	IMM	F7	-
CE	DEC	ABS	DC	-		EA	NOP	IMP	F8	SED IMP
CF	-		DD	CMP	ABS,X	EB	-		F9	SBC ABS,Y
D0	BNE	REL	DE	DEC	ABS,X	EC	CPX	ABS	FA	-
D1	CMP	(IND),Y	DF	-		ED	SBC	ABS	FB	-
D2	-		E0	CPX	IMM	EE	INC	ABS	FC	-
D3	-		E1	SBC	(IND,X)	EF	-		FD	SEC ABS,X
D4	-		E2	-		F0	BEQ	REL	FE	INC ABS,X
D5	CMP	Z,X	E3	-		F1	SBC	(IND),Y	FF	-