Partial	Listing of 8051	Mnemoni	CS			
when the	re are 2 operands the	format is alwa	ays: operation de	stination, s	source	
Rn	Register R7-R0 of the currently selected Register Bank.					
direct	8-bit internal data location's direct address. This could be an Internal Data RAM location (0-127) or a S					a SFR [i.e., I/
@Ri	8-bit internal data RAM location (0-255) addressed indirectly through register R1 or R0.					
#data	8-bit constant included in instruction.				<u> </u>	
#data 16	16-bit constant included in instruction.					
port	Ports 0, 1, 2, and 3 (mapped as 080h, 090h, 0A0h, and 0B0h). They are set to output ports on start-up and must be initialized for input by sending the data 0FFh to them, as appripriate.					
addr 16	Memory address space	e.			,,	5
	11-bit destination address. Used by ACALL and AJMP. The branch will be within the same 2K byte page of program memory as the first byte of the following instruction.					
addr 11	program memory as th	ne first byte of	the following instru	ction.		
addr 11 rel	program memory as the Signed (two's complete bytes relative to first b	ne first byte of ment) 8-bit offs yte of the follow	the following instru set byte. Used by S wing instruction.	ction. JMP and <i>a</i>	Il conditional jumps. Range is -12	8 to +127
addr 11 rel bit	program memory as the Signed (two's completer bytes relative to first be Direct Addressed bit,	ne first byte of ment) 8-bit offs yte of the follow in Internal Dat	the following instru set byte. Used by S wing instruction. a RAM or Special f	ction. JMP and <i>a</i> Function Re	egister (see note at end)	8 to +127
addr 11 rel bit	Program memory as the Signed (two's complete bytes relative to first be Direct Addressed bit,	ne first byte of ment) 8-bit offs yte of the follow in Internal Dat	the following instru set byte. Used by S wing instruction. a RAM or Special f	ction. JMP and <i>a</i> Function Re	egister (see note at end)	8 to +127
addr 11 rel bit DATA TR	program memory as the Signed (two's compler bytes relative to first be Direct Addressed bit,	ne first byte of ment) 8-bit offs yte of the follow in Internal Dat	the following instru set byte. Used by S wing instruction. a RAM or Special F	ction. JMP and <i>a</i> Function Re and DPTR	egister (see note at end)	8 to +127
addr 11 rel bit DATA TR operatior	Program memory as the Signed (two's complement bytes relative to first b Direct Addressed bit, RANSFER	he first byte of ment) 8-bit offs yte of the follow in Internal Dat	the following instru set byte. Used by S wing instruction. a RAM or Special F (MOVC. MOVX. Operand 1	ction. JMP and <i>a</i> Function Re and DPTR , Op	egister (see note at end) R instructions not included)	8 to +127
addr 11 rel bit DATA TR operatior copy data	Program memory as the Signed (two's completer bytes relative to first be Direct Addressed bit, RANSFER n a to A or B	me first byte of ment) 8-bit offs yte of the follor in Internal Dat	the following instru set byte. Used by S wing instruction. a RAM or Special F (MOVC. MOVX. Operand 1 A or B	ction. JMP and <i>a</i> Function Re and DPTR , Op Rn -	egister (see note at end) t instructions not included) perand 2 – direct - @Ri - #data – port	8 to +127
addr 11 rel bit DATA TR operatior copy data copy data	Program memory as the Signed (two's complement bytes relative to first be Direct Addressed bit, RANSFER n a to A or B a to Reg.	me first byte of ment) 8-bit offs yte of the follor in Internal Dat Mnemonic MOV MOV	the following instru set byte. Used by S wing instruction. a RAM or Special f (MOVC. MOVX. Operand 1 A or B Rn	ction. JMP and <i>a</i> Function Re and DPTR , Op Rn - A –	egister (see note at end) c instructions not included) berand 2 direct - @Ri - #data – port direct - #data – port	8 to +127
addr 11 rel bit DATA TR operatior copy data copy data copy to di	Program memory as the Signed (two's complement bytes relative to first be Direct Addressed bit, RANSFER nato A or B a to A or B a to Reg.	Mnemonic MOV MOV MOV	the following instru set byte. Used by S wing instruction. a RAM or Special f (MOVC. MOVX. Operand 1 A or B Rn direct	ction. JMP and <i>a</i> Function Re and DPTR , Op Rn - A – A –	egister (see note at end) R instructions not included) Derand 2 - direct - @Ri - #data – port direct - #data – port direct - Rn - @Ri - #data – port	8 to +127
addr 11 rel bit DATA TR operation copy data copy data copy to di copy to in	Program memory as the Signed (two's complement bytes relative to first be Direct Addressed bit, RANSFER n a to A or B a to Reg. irect memory adjrect mem	Mnemonic MOV MOV MOV MOV MOV	the following instru set byte. Used by S wing instruction. a RAM or Special F (MOVC. MOVX. Operand 1 A or B Rn direct @Ri	ction. JMP and <i>a</i> Function Re and DPTR , Op Rn - A - A - A - A -	egister (see note at end) egister (see note at end) enstructions not included) oerand 2 - direct - @Ri - #data – port direct - #data – port direct - Rn - @Ri - #data – port direct - #data – port	8 to +127
addr 11 rel bit DATA TR operatior copy data copy data copy to di copy to in copy data	ANSFER a to A or B a to Reg. birect memory a to a port (P1 – P3)	Mnemonic MOV MOV MOV MOV MOV MOV MOV MOV	the following instru set byte. Used by S wing instruction. a RAM or Special F (MOVC. MOVX. Operand 1 A or B Rn direct @Ri port	ction. JMP and a Function Re and DPTR , Op Rn - A - A - A - A - 0 A - 0	egister (see note at end) egister (see note at end) t instructions not included) perand 2 – direct - @Ri - #data – port direct - #data – port direct - Rn - @Ri - #data – port direct - #data – port direct - Rn - @Ri - #data – port	8 to +127
addr 11 rel bit DATA TR operation copy data copy data copy to di copy to in copy data push byte	ANSFER n a to A or B a to Reg. irect memory direct memory a to a port (P1 – P3) e onto stack	Mnemonic MOV MOV MOV MOV MOV MOV MOV MOV MOV MOV	the following instru set byte. Used by S wing instruction. a RAM or Special f (MOVC. MOVX. Operand 1 A or B Rn direct @Ri port direct	ction. JMP and a Function Re and DPTR , Op Rn - A - 0 A - 0 A - 0	egister (see note at end) c instructions not included) erand 2 - direct - @Ri - #data – port direct - Rn - @Ri - #data – port direct - Rn - @Ri - #data – port	8 to +127
addr 11 rel bit DATA TR operation copy data copy data copy to di copy to in copy data push byte pop byte f	Anstead of the standard of the	Mnemonic MOV MOV MOV MOV MOV MOV MOV MOV MOV PUSH POP	the following instru set byte. Used by S wing instruction. a RAM or Special f (MOVC. MOVX. Operand 1 A or B Rn direct @Ri port direct direct	ction. JMP and <i>a</i> Function Re and DPTR , Op Rn - A - A - A - A - A -	egister (see note at end) a instructions not included) Derand 2 - direct - @Ri - #data – port direct - #data – port direct - Rn - @Ri - #data – port direct - #data – port direct - Rn - @Ri - #data – port direct - Rn - @Ri - #data – port	8 to +127
addr 11 rel bit DATA TR operation copy data copy data copy to di copy to in copy data push byte pop byte f	Ansternation addination addinatio addination addination addination addination addination	Mnemonic MOV MOV MOV MOV MOV MOV MOV MOV MOV MOV	the following instru set byte. Used by S wing instruction. a RAM or Special F (MOVC. MOVX. Operand 1 A or B Rn direct @Ri port direct direct A	ction. JMP and <i>a</i> . Function Re and DPTR , Op Rn - A - A - A - A - a A - a A - a A - a	egister (see note at end) R instructions not included) Derand 2 - direct - @Ri - #data – port direct - #data – port direct - Rn - @Ri - #data – port direct - Rn - @Ri - #data – port direct - Rn - @Ri - #data – port	8 to +127
addr 11 rel bit DATA TR operation copy data copy data copy to di copy to in copy data push byte pop byte 1 exchange copy dired	A to A or B a to A or B a to Reg. irect memory direct memory a to a port (P1 – P3) e onto stack from stack data with A ct bit to carry	Mnemonic MOV MOV MOV MOV MOV MOV MOV MOV MOV MOV	the following instru set byte. Used by S wing instruction. a RAM or Special F (MOVC. MOVX. Operand 1 A or B Rn direct @Ri port direct direct A C	ction. JMP and a Function Re and DPTR , Op Rn - A - A - A - A - a A - a A - a bit	egister (see note at end) egister (see note at end) entropy of the second secon	8 to +127

push byte onto stack	1 0011	uneor		
pop byte from stack	POP	direct		
exchange data with A	XCH	A	direct – Rn - @Ri	
copy direct bit to carry	MOV	С	bit	С
copy carry to direct bit	MOV	bit	С	
				· · ·

nemonic DD / DDC / JBB /	Operand 1 A A A	, Operand 2 Rn – direct - @Ri - #data – port Rn – direct - @Ri - #data - port Rn – direct - @Ri - #data - port	flags C, OV, AC C, OV, AC C, OV, AC C, OV, AC
DD / DDC / JBB /	A A A	Rn – direct - @Ri - #data – port Rn – direct - @Ri - #data - port Rn – direct - @Ri - #data - port	C, OV, AC C, OV, AC C, OV, AC
DC /	A A	Rn – direct - @Ri - #data - port Rn – direct - @Ri - #data - port	C, OV, AC C, OV, AC
JBB	A	Rn – direct - @Ri - #data - port	C, OV, AC
<u> </u>			
<u>ا</u> ن	A–Rn–direct-@Ri-port		
C A	A–Rn–direct-@Ri-port		
JL ,	AB		OV, C=0
V A	AB		OV, C=0
\	A		С
		A -Rn-direct-@Ri-port ARn-direct-@Ri-port AB AB A	A ARI-direct-@Ri-port A AB AB A

LOGICAL OPERATIONS				
operation	Mnemonic	Operand 1	, Operand 2	flags
AND to A	ANL	A	Rn – direct - @Ri - #data - port	
AND to direct or port	ANL	Direct - port	A - #data	
OR to A	ORL	A	Rn – direct - @Ri - #data - port	
OR to direct	ORL	Direct - port	A - #data	
XOR to A	XOR	A	Rn – direct - @Ri - #data - port	
XOR to direct	XOR	Direct - port	A - #data	
clear A	CLR	A		
compliment A	CPL	A		
clear C flag	CLR	С		С
compliment C flag	CPL	С		С
rotate A left	RL	A		
rotate A left thru Carry	RLC	A		С
rotate A right	RR	A		
rotate A right thru Carry	RRC	A		С
(continued next page)				

LOGICAL OPERATIONS (cont	tinued)			
operation	Mnemonic	Operand 1	, Operand 2	flags
swap nibbles within A	SWAP	A		
AND direct bit to Carry	ANL	C, bit		
AND compliment of bit to Carry	ANL	C, /bit		
OR direct bit to Carry	ORL	C. bit		
OR compliment of bit to Carry	ORL	C, /bit		
	-	- , .		
BOOLEAN VARIABLE MANIPU	JLATION			
operation	Mnemonic	Operand 1	. Operand 2	flags
clear carry flag	CLR	C		C=0
clear direct bit		bit		
set carry flag	SETB	C		C=1
set direct bit	SETB	bit		
compliment carry flag	CPI	C		C
compliment direct bit		bit		0
		DI		
PROGRAM BRANCHING				
operation	Mnemonic	Operand 1	Operand 2	flags
subroutine call	ACALI	addr11		inage
long subroutine call		addr16		
return from subroutine	RET			
		addr11		
		addr16		
Short Jump (relative addr)	SIMP	rel		
lump if A=0	.17	rel		
lump if A<>0	JNZ	rel		
decrement Byte & jump if <>0		Rn – direct	rel	
compare Byte: jump if not equal	CUNE		direct rel	C
compare data: jump if not equal		A – Rn - @Ri	#data rel	C
lump if carry is set				0
lump if Carry not set		rel		
lump if bit is set	IB	hit rel		
lump if bit not set	INB	hit rel		
lump if bit set then clear bit	IBC	hit rol		(bit=0)
no operation	NOP			(bit=0)
General Purpose RAM available	to the user is	020h through 070h (a	 byte addressible) The	
Following are both byte and bit	addressable.	5 02011 (1100g11 07011 (a	in byte addressible).	
RAM locations 20h through 2Fh.	ACC, B. port	ts. PSW (0D0h), IP, IE,	TCON	
Proce	essor Status v	word	· · · · · · · · · · · · · · · · · · ·	
(MCD)		(102)		
PSW.7 PSW.6 F	SW.5 PSW.4 PS	SW.3 PSW.2 PSW.1 PSW.0		
Direct Addressing D0H CY AC	F0 RS1 R	50 OV - P		
Bit Address DZ D6	D5 D4	D3 D2 D1 D0		
	+ +			
Auxilary Carry Flag		User De	- Parity Flag efinable Flag	
General Purpose Status Flag-		Overflow Flag	Folget Bit 0	
Register Bank Select Bit 1		Register Bank		_
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