DATABASE

Here, courtesy of Zilog Inc., we reproduce a further part of the Z80 programmers' reference card.

Input and Output Groups

Input Group

INPUT DESTINATION			PORT ADDRESS: IMMED n	PORT ADDRESS: REG. INDIR (C)
INPUT 'IN'	REGISTER ADDRESSING	A	DB n	ED 78
		B		ED 40
		C		ED 48
		D		ED 50
		E		ED 58
		H		ED 60
		L		ED 68
'INI'-INPUT & Inc HL, Dec B	REGISTER INDIRECT	(HL)		ED A2
'INIR'-INP, Inc HL, Dec B, REPEAT IF B ≠ 0				ED B2
'IND'-INPUT & Dec HL, Dec B				ED AA
'INDR'-INPUT, Dec HL Dec B, REPEAT IF B ≠ 0				ED BA

BLOCK INPUT COMMANDS

Output Group

			SOURCE: REGISTER A	B	C	D	E	H	L	REG. IND. (HL)
'OUT'	IMMED	n	D3 n							
	REG. IND.	(C)	ED 79	ED 41	ED 49	ED 51	ED 59	ED 61	ED 69	
'OUTI'-OUTPUT Inc HL, Dec B	REG. IND.	(C)								ED A3
'OTIR'-OUTPUT, Inc HL, Dec B, REPEAT IF B ≠ 0	REG. IND.	(C)								ED B3
'OUTD'-OUTPUT Dec HL Dec B	REG. IND.	(C)								ED AB
'OTDR'-OUTPUT, Dec HL Dec B, REPEAT IF B ≠ 0	REG. IND.	(C)								ED BB

PORT DESTINATION ADDRESS

BLOCK OUTPUT COMMANDS

Mnemonic	Symbolic Operation	Flags S	Z	H	P/V	N	C	Opcode 76 543 210	Hex	No. of Bytes	No. of M Cycles	No. of T States	Comments
IN A, (n)	A ← (n)	•	•	X	•	X	•	•	•	11 011 011 — n —	DB	2	3	11	n to A_0 – A_7 Acc to A_8 – A_{15}
IN r, (C)	r ← (C) If r = 110 only the flags will be affected	↕	↕ ①	X	↕	X	P	0	•	11 101 101 01 r 000	ED	2	3	12	C to A_0 – A_7 B to A_8 – A_{15}
INI	(HL) ← (C) B ← B – 1 HL ← HL + 1	X	↕ ①	X	X	X	X	↕	•	11 101 101 10 100 010	ED A2	2	4	16	C to A_0 – A_7 B to A_8 – A_{15}
INIR	(HL) ← (C) B ← B – 1 HL ← HL + 1 Repeat until B = 0	X	1 ①	X	X	X	X	1	•	11 101 101 10 110 010	ED B2	2 2	5 (If B ≠ 0) 4 (If B = 0)	21 16	C to A_0 – A_7 B to A_8 – A_{15}
IND	(HL) ← (C) B ← B – 1 HL ← HL – 1	X	↕ ①	X	X	X	X	↕	•	11 101 101 10 101 010	ED AA	2	4	16	C to A_0 – A_7 B to A_8 – A_{15}
INDR	(HL) ← (C) B ← B – 1 HL ← HL – 1 Repeat until B = 0	X	↕	X	X	X	X	↕	•	11 101 101 10 111 010	ED BA	2 2	5 (If B ≠ 0) 4 (If B = 0)	21 16	C to A_0 – A_7 B to A_8 – A_{15}
OUT (n), A	(n) ← A	•	•	X	•	X	•	•	•	11 010 011 — n —	D3	2	3	11	n to A_0 – A_7 Acc to A_8 – A_{15}
OUT (C), r	(C) ← r	•	•	X	•	X	•	•	•	11 101 101 01 r 001	ED	2	3	12	C to A_0 – A_7 B to A_8 – A_{15}
OUTI	(C) ← (HL) B ← B – 1 HL ← HL + 1	X	↕ ①	X	X	X	X	1	•	11 101 101 10 100 011	ED A3	2	4	16	C to A_0 – A_7 B to A_8 – A_{15}
OTIR	(C) ← (HL) B ← B – 1 HL ← HL + 1 Repeat until B = 0	X	1 ①	X	X	X	X	1	•	11 101 101 10 110 011	ED B3	2 2	5 (If B ≠ 0) 4 (If B = 0)	21 16	C to A_0 – A_7 B to A_8 – A_{15}
OUTD	(C) ← (HL) B ← B – 1 HL ← HL – 1	X	↕ ①	X	X	X	X	1	•	11 101 101 10 101 011	ED AB	2	4	16	C to A_0 – A_7 B to A_8 – A_{15}
OTDR	(C) ← (HL) B ← B – 1 HL ← HL – 1 Repeat until B = 0	X	1 ①	X	X	X	X	1	•	11 101 101 10 111 011	ED BB	2 2	5 (If B ≠ 0) 4 (If B = 0)	21 16	C to A_0 – A_7 B to A_8 – A_{15}

NOTE: ① If the result of B – 1 is zero the Z flag is set, otherwise it is reset.

Flag Notation: • = flag not affected, 0 = flag reset, 1 = flag set, X = flag is unknown, ↕ = flag is affected according to the result of the operation