

MOVES AND MOVE IMMEDIATES											Flag Code: (N)		NEW	OLD
	NEW	OLD	←A	←B	←C	←D	←E	←H	←L	←M	MVI, d8	LAI, d8		
A ←	MOV A, r	LAr	300	301	302	303	304	305	306	307	006			
B ←	MOV B, r	LBr	310	311	312	313	314	31	316	317	016			
C ←	MOV C, r	LCr	320	321	322	323	324	325	326	327	026			
D ←	MOV D, r	LDr	330	331	332	333	334	335	335	337	036			
E ←	MOV E, r	LEr	340	341	342	343	344	345	346	347	046			
H ←	MOV H, r	LHr	350	351	352	353	354	355	356	357	056			
L ←	MOV L, r	LLr	360	361	362	363	364	365	366	367	066			
M ←	MOV M, r	LMr	370	371	372	373	374	375	376		076			

Octal	Hex	Binary
000	0	0000
001	1	0001
002	2	0010
003	3	0011
004	4	0100
005	5	0101
006	6	0110
007	7	0111
010	8	1000
011	9	1001
012	A	1010
013	B	1011
014	C	1100
015	D	1101
016	E	1110
017	F	1111

Machine Instruction, I/O

MACHINE CONTROL (N)				EQUIVALENT MACHINE INSTRUCTIONS								
No Operation	NOP	300		HLT	000	001	377					
Halt	HLT	000		JMP	104	114	124	134	144	154	164	174
				CAL	106	116	126	136	146	156	166	176
				RET	007	017	027	037	047	057	067	077

IN / OUT (N)	NEW	OLD	0	1	2	3	4	5	6	7	8	9
IN	IN, p	INP, p	101	103	105	107	111	113	115	117		
OUT 00X	OUT, p										121	123
OUT 01X	OUT, p		125	127	131	133	135	137	141	143	145	147
OUT 02X	OUT, p		151	153	155	157	161	163	165	167	171	173
OUT 03X	OUT, p		175	177								

BitsOfTheGoldenAge.org

V1.3 © 2022 CCA

Arithmetic Group

INCREMENT / DECREMENT (B)	NEW	OLD	A	B	C	D	E	H	L	M	IMMEDIATE
Increment Register	INR	INr		010	020	030	040	050	060		
Decrement Register	DCR	DCr		011	021	031	041	051	061		

ADD / SUBTRACT (A)	NEW	OLD	A	B	C	D	E	H	L	M	IMMEDIATE
ADD to A → A	ADD, r	ADr	200	201	202	203	204	205	206	207	004 ADI, d8
ADD to A w/Carry → A	ADC, r	ACr	210	211	212	213	214	215	216	217	014 ACI, d8
SUB from A → A	SUB, r	SUr	220	221	222	223	224	225	226	227	024 SUI, d8
SUB with Borrow → A	SBB, r	SBr	230	231	232	233	234	235	236	237	034 SBI, d8

FLAGS B ₇ → C				
	S	Z	P	C
0	P	NZ	E	NC
1	M	Z	O	C

Branch Control

RETURN, JUMP, & CALLS (N)			ZERO		CARRY		PARITY		SIGN		FLAG CODES	
STANDARD or		NEW->	Z	NZ	NC	C	PO	PE	P	M	(A) ALL	Z, S, P, CY
c=CONDITIONAL		OLD->	TZ	FZ	FC	TC	FP	TP	FS	TS	(B) ALL BUT CARRY	Z, S, P
RET	007	Rc	053	013	003	043	033	073	023	063	(C) CARRY ONLY	CY
JMP	104	Jc	150	110	100	140	130	170	120	160	(O) ALL, C=0	Z,S,P,CY=0
CALL	106	Cc	152	112	102	142	132	172	122	162	(N) NONE	

Logical Group

ROTATES Flag Code: (C)		
Rotate Left & Into Carry	RLC	002
Rotate Right & Into Carry	RRC	012
Rotate All Left Through Carry	RAL	022
Rotate All Right Through Carry	RAR	032

RESTARTS Flag Code: (N)										
NEW	RST	0	1	2	3	4	5	6	7	
OLD	RST	005	015	025	035	045	055	065	075	
	INST	005	015	025	035	045	055	065	075	
	ADDR	000	010	020	030	040	050	060	070	

Re flags: CPI & CMP are just a SUB d or SUB r, so A-r=0 -> Z=1, A-r<0 -> CY=1

LOGICAL Flag Code:		A	B	C	D	E	H	L	M	I
(0) AND A with r → A	ANA	240	241	242	243	244	245	246	247	ANI
	OLD INST	NDA	NDB	NDC	NDD	NDE	NDH	NDL	NDM	NDI
(0) XOR A with r → A	XRA	250	251	252	253	254	255	256	257	XRI
	OLD INST	XRA	XRB	XRC	XRD	XRE	XRH	XRL	XRM	XRI
(0) OR A with r → A	ORA	260	261	262	263	264	265	266	267	ORI
	OLD INST	ORA	ORB	ORC	ORD	ORE	ORH	ORL	ORM	ORI
(A) Compare A with r	CMP	270	271	272	273	274	275	276	277	CPI
	OLD INST	CPA	CPB	CPC	CPD	CPE	CPH	CPL	CPM	CPI

COMPARE		
CMP r; CPI d		
	CY	Z
A < d	1	
A ≤ d	1	1
A = d		1
A ≠ d		0
A ≥ d	0	
A > d		0

Bold values are the primary result of the SUB

ASCII AND BASE CONVERSION TABLE

Table with 21 columns: DEC, BINARY, HEX, OCT, CHARACTER, DEC, BINARY, HEX, OCT, CHR, DEC, BINARY, HEX, OCT, CHR, DEC, BINARY, HEX, OCT, CHR. Rows include standard ASCII characters (0-127) and various Latin characters and symbols (128-255).