ARQUITECTURA DE LAS COMPUTADORAS

PROGRAMAS UTILIZANDO EL MICROPROCESADOR 8085

DETERMINAR PASO A PASO EL RESULTADO DE LA CORRIDA DE LOS SIGUIENTES PROGRAMAS

1)

MEMORIA	CONTENIDO	MNEMONICO
D010	3F	CMC
D011	A6	ANA M
D012	C3	JMP addr
D013	16	16
D014	D0	D0
D015	8E	ADC M
D016	AB	XRA r
D017	EA	JPE
D018	12	12
D019	D0	D0
D01A	16	MVI r, data
D01B	24	24
D01C	22	SHLD
D01D	00	00
D01E	E0	E0
D01F	76	HLT
--------	----	----------
E000	39	39
E001	45	45

REGISTROS

A	66	06	F
B	07	00	C
D	00	8E	E
H	D0	10	L
PC	D0 11		
SP	F0 A0		

Respuesta:

M. D011: ANA M (reg. ind., #1)

(A) = (A) . ((H) (L)) = (A) . (D010) = 66 . 3F = 26 = (A)

```
  01100110
x 00111111
  00100110
```

(F) = 0 0 0 0 0 0 1 0 = 0 2

(PC)= D012

M. D012: JMP addr (inm., #3)

(PC)= D016

M. D016: XRA r (reg., #1)

(A)= (A) ⊕ (r)

```
10101011
   SSS = E
```

(A) = (A) ⊕ (E) = 2 6 ⊕ 8 E = A 8

(F)= 10000010 = 82

0 0 1 0 0 1 1 0
⊕ 1 0 0 0 1 1 1 0
1 0 1 0 1 0 0 0

(PC)= D017

M. D017: JPE (inm., #3)

¿P= 1? ⟶ NO ➔ NO SALTA ➔ (PC)= D01A

M. D01A: MVI r (inm., #2)

(r)= (byte 2) 00010110
DDD = D

(D)= 24

(PC)= D01C

D01C: SHLD addr (directo, #3)

((byte 3) (byte 2)) ⟵ (L) ((byte 3) (byte 2) + 1) ⟵ (H)

(E000) ⟵ (L) = 10 (E001) ⟵ (H) = D0

(PC) = D01F

MEM D01F: HLT (#1) stop (PC) = D020

FINALMENTE:

REGISTROS

A	A8	82	F
B	07	00	C
D	24	8E	E
H	D0	10	L
PC	D0 20		
SP	F0 A0		
(E000)	1 0		
(E001)	D 0		

2)

MEMORIA	CONTENIDO	MNEMÓNICO
3000	4D	MOV r_1 , r_2
3001	96	SUB M
3002	02	STAX B
3003	C2	JNZ
3004	01	01
3005	30	30
3006	76	HLT
-------	----	----------
5DF1	2C	2C

REGISTROS

(A)= E7 (F)= 87
(B)= 5D (C)= 00
(D)= 00 (E)= 00
(H)= 5D (L)= F1
(PC)= 3000
(SP)= FF10

Respuesta:

M. 3000: MOV r_1 , r_2 (reg., #1)

$(r_1) \leftarrow (r_2)$ 4 D = 0 1 0 0 1 1 0 1

DDD/S S S

(C)= F 1 = (L) "C" / " L"

(PC)= 3001

M. 3001: SUB M (reg. ind., #1)

(A)= (A) - ((H)(L))

(A)= E 7 - (5DF1) = 2C= 00101100 $\longrightarrow$ C_2 = 11010100

\+ E 7 = 11100111

(A) = E 7 – 2 C = B B 1 10111011

(F)= 10000111= 87

(PC)= 3002

M. 3002: STAX B (reg. ind., #1)

((rp)) $\leftarrow$(A)

((B)(C)) = (A) ➔ (5DF1) = B B

(PC)= 3003

M. 3003: JNZ (inm., #3)

Z=0? → SI ➔ SALTA ➔ (PC)= 3001

M. 3001: SUB M (reg. Ind., #1)

(A) = B B - B B = 0 0 10111011

\+ 01000101

(F)= 01010111 = 57 1 00000000

(PC)= 3002

M. 3002: STAXB (reg. Ind., #1)

((B)(C)) = (A) ➔ (5DF1)= 0 0

(PC)= 3003

M. 3003: JNZ

Z=0? → NO ➔ NO SALTA ➔ (PC)= 3006

M. 3006: HLT (#1) stop ➔ (PC)= 3007

FINALMENTE: (A)= 00 (F)= 57 (B)= 5D (C)= F1

(D)= 00 (E)= 00 (H)= 5D (L)= F1

(PC)= 3007 (SP)= FF10 (5DF1)= 00

3)

MEMORIA	CONTENIDO	MNEMONICO
18F4	A9	A9
------	----	--------
1900	33	INX SP
1901	A1	ANA r
1902	F2	JP addr
1903	06	06
1904	19	19
1905	3F	CMC
1906	12	STAX D
1907	1C	INR r
1908	15	DCR r
1909	76	HLT

REGISTROS

A	B5	83	F
B	00	79	C
D	18	F4	E
H	10	04	L
PC	19 00		
SP	F0 A0		

Respuesta: MEM 1900: INX SP (registro, #1)

(rh)(rl) ⟵ (rh)(rl) + 1

(SP) ⟵ (SP) + 1 ➔ (SP) = F0A1

(PC) = 1901

MEM 1901: ANA r (registro, #1) 10100001

SSS = C

(A) ⟵ (A) . (r)

(A) ⟵ (A) . (C)

(A) ⟵ B 5 . 7 9 = 3 1

(F) = 0 0 0 0 0 0 1 0 = 0 2

```
  10110101
x 01111001
  00110001
```

(PC) = 1902

MEM 1902: JP addr (inmediato, #3)

¿S = 0? ⟶ SI ➔ SALTA ➔ (PC) = 1906

MEM 1906: STAX D (reg. Indirecto, #1)

((rp)) ⟵ (A)

((D) (E)) ⟵ (A) ➔ (18F4) ⟵ 31

(PC) = 1907

MEM 1907: INR r (registro, #1)

(r) ⟵ (r) + 1 1 C = 0 0 0 1 1 1 0 0
DDD = E

(E) ⟵ (E) + 1 = F 4 + 1 = F 5

(F) = 1 0 0 0 0 1 1 0 = 8 6

(PC) = 1908

MEM 1908: DCR r (registro, #1) 1 5 = 0 0 0 1 0 1 0 1
DDD = D

(r) ⟵ (r) - 1

(D) ⟵ (D) - 1 = 1 8 - 1 = 1 8 + FF =

(D) = 17

```
  1  1111
     00011000
+    11111111
  1  00010111
```

(F) = 0 0 0 1 0 1 1 0 = 16

(PC) = 1909

MEM 1909: HLT (#1) stop (PC) = 190A

FINALMENTE:

REGISTROS

A	31	16	F
B	00	79	C
D	17	F5	E
H	10	04	L
PC	19 0A		
SP	F0 A1		
(18F4)	3 1		

4)

MEMORIA	CONTENIDO	MNEMONICO
1000	A0	ANA r
1001	C6	ADI data
1002	1C	1C
1003	B6	ORA M
1004	32	STA addr
1005	1F	1F
1006	95	95
1007	00	NOP
1008	1B	DCX D
1009	76	HLT
-------	-----	----------
951F	3A	3A

REGISTROS

A	FA	86	F
B	99	11	C
D	0A	00	E
H	95	1F	L
PC	10 00		
SP	FF 01		

Respuesta:

MEM 1000: ANA r (registro, #1) A 0 = 1 0 1 0 0 0 0 0
SSS = "B"

(A) ← (A) . (r)

(A) ← (A) . (B) = F A . 9 9 ➔ (A) = 9 8

(F) = 1 0 0 0 0 0 1 0 = 8 2

```
  1 1 1 1 1 0 1 0
x 1 0 0 1 1 0 0 1
  1 0 0 1 1 0 0 0
```

(PC) = 1001

MEM 1001: ADI data (inmediato, #2)

(A) ← (A) + (byte 2) = 9 8 + 1 C = B 4

(F) = 1 0 0 1 0 1 1 0 = 9 6

```
    1 1
  1 0 0 1 1 0 0 0
+ 0 0 0 1 1 1 0 0
  1 0 1 1 0 1 0 0
```

(PC) = 1003

MEM 1003: ORA M (reg. Ind.,#1)

(A) ← (A) + ((H) (L)) = B 4 + 3 A = B E

(F) = 1 0 0 0 0 1 1 0 = 8 6

```
  1 0 1 1 0 1 0 0
"OR" + 0 0 1 1 1 0 1 0
  1 0 1 1 1 1 1 0
```

(PC) = 1004

MEM 1004: STA addr (directo, #3)

((byte 3) (byte 2)) ← (A)

(951F) ← (A) ➔ (951F) = B E

(PC) = 1007

MEM 1007: NOP (#1) pausa

(PC) = 1008

MEM 1008: DCX D (registro, #1)

(rh) (rl) ⟵ (rh) (rl) - 1

(D) (E) ← (D) (E) -1 = 0A00 - 1 = 0A00 + FFFF = 09FF

(D) = 0 9 (E) = F F

(PC) = 1009

MEM 1009: HLT (#1) stop

(PC) = 100A

FINALMENTE:

REGISTROS

A	BE	86	F
B	99	11	C
D	09	FF	E
H	95	1F	L
PC	10 0A		
SP	FF 01		
(951F)	B E		

5)

MEMORIA	CONTENIDO	MNEMONICO
D000	76	HLT
D001	13	INX D
D002	CA	JZ addr
D003	0B	
D004	D0	
D005	1A	LDAX D
D006	96	SUB M
D007	C3	JMP addr
D008	01	
D009	D0	
D00A	15	DCR r
D00B	AA	XRA r
D00C	76	HLT
D00D	A7	ANA r

REGISTROS

A	FF	86	F
B	04	03	C
D	D0	09	E
H	D0	0A	L
PC	D0 01		

Respuesta:

MEM D001: INX D (registro, #1)

(rh) (rl) ⟵ (rh) (rl) + 1

(D) (E) ⟵ (D) (E) + 1

D009 + 1 = D00A ==> (D) = D0 , (E) = 0A

(PC) = D002

MEM D002: JZ addr (inmediato, #3)

¿Z= 1? → NO ==> NO SALTA ===> (PC) = D005

MEM D005: LDAX D (registro indirecto, #1)

(A) ⟵ ((rp))

(A) ⟵ ((D) (E)) ➔ (A) ⟵ (D00A) = 1 5

(PC) = D006

MEM D006: SUB M (reg. Ind., #1)

(A) ⟵ (A) - ((H) (L)) = (A) - (D 0 0 A)

(A) = 1 5 – 1 5 = 0 0

(F) = 0 1 0 1 0 1 1 1 = 5 7

```
  1111111
  00010101
+ 11101011
1 00000000
```

(PC) = D007

MEM D007: JMP addr (inmediato, #3)

(PC) ⟵ (byte 3)(byte2) ===> (PC) = D001

MEM D001: INX D

(D)(E) ⟵ D00A + 1 = D00B ➔ (D) = D0 , (E) = 0B

(PC) = D002

MEM D002: JZ addr

¿Z = 1? ⟶ SI ➔ SALTA ➔ (PC) = D00B

MEM D00B: XRA r (registro, #1) AA = 10101010
SSS = D

(A) ⟵ (A) ⊕ (r)

(A) ⟵ (A) ⊕ (D)

(A) = 0 0 ⊕ D 0 = D 0

```
  00000000
⊕ 11010000
  11010000
```

(E) = 1 0 0 0 0 0 1 0 = 8 2

(PC) = D00C

MEM D00C: HLT stop

(PC) = D00D

FINALMENTE: (A) = D0 (F) = 82 (B) = 04 (C) = 03

(D) = D0 (E) = 0B (H) = D0 (L) = 0A

(PC) = D00D

6)

MEMORIA	CONTENIDO	MNEMONICO
6000	11	LXI D
6001	00	
6002	A0	
6003	1A	LDAX D
6004	EB	XCHG
6005	AE	XRA M
6006	2F	CMA
6007	FA	JM
6008	00	
6009	60	
600A	B6	ORA M
600B	76	HLT
600C	A7	ANA r
------	----	----------
A000	AA	
A001	61	
A002	16	
A003	00	
A004	55	
A005	66	

REGISTROS (EST. INICIAL)

A	00	87	F
B	11	07	C
D	A0	03	E
H	A0	04	L
PC	60	00	

Respuesta:

MEM 6000: LXI D (inmediato, #3)

(rh) ⟵(byte 3) , (rl) ⟵ (byte 2)

(D)⟵A0 , (E) ⟵00

(PC) = 6003

MEM 6003: LDAX D (reg. Indirecto, #1)

(A)⟵ ((rp)) = ((D) (E)) ➔ (A)⟵ (A000) = A A

(PC) = 6004

MEM 6004: XCHG (reg., #1)

(H) ⇔ (D) , (L) ⇔ (E)

(H) = A0 , (D) = A0 , (L) = 00 , (E) = 04

(PC) = 6005

MEM 6005: XRA M (reg. Ind., #1)

(A)⟵ (A) ⊕ ((H) (L)) = (A) ⊕ (A000) =

$$\begin{array}{r} 10101010 \\ \oplus\ 10101010 \\ \hline 00000000 \end{array}$$

(A) = AA ⊕ AA = 0 0

(F) = 0 1 0 0 0 1 1 0 = 4 6

(PC) = 6006

MEM 6006: CMA (#1)

(A) ← (A') (A) = 0 0 0 0 0 0 0 0 ➔ (A') = 1 1 1 1 1 1 1 1

(A) = F F

(PC) = 6007

MEM 6007: JM addr (inmediato, #3)

¿S = 1? → NO ➔ NO SALTA ➔ (PC) = 600A

MEM 600A: ORA M (reg. Ind., #1)

(A) ← (A) + ((H) (L))

(A) ← (A) + (A000) = FF + AA
(A) = FF
(F) = 86
(PC) = 600B

```
  11111111
"OR" 10101010
  11111111
```

MEM 600B: HLT (#1) stop (PC) = 600C

FINALMENTE: (A) = FF (F) = 86 (B) = 11 (C) = 07

(D) = A0 (E) = 04 (H) = A0 (L) = 00 (PC) = 600C

7)

MEMORIA	CONTENIDO	MNEMONICO
3000	CE	ACI data
3001	25	
3002	A7	ANA r
3003	3C	INR r
3004	F2	JP
3005	03	
3006	30	
3007	76	HLT

REGISTROS

A	00	46	F
B	11	07	C
D	32	28	E
H	00	FF	L
PC	30 00		
SP	FB 00		

Respuesta:

MEM 3000: ACI data (inmediato, #2)

(A) ← (A) + (byte 2) + (Cy) = 00 + 25 + 0 = 25

(F) = 0 0 0 0 0 0 1 0 = 0 2

(PC) = 3002

MEM 3002: ANA r (registro, #1)

(A) ← (A) . (r)

(A) ← (A) . (A) = 25 . 25 = 25 A7 = 10100111
SSS = A

(E) = 0 0 0 0 0 0 1 0 = 0 2

(PC) = 3003

MEM 3003: INR r (registro, #1)

3C = 00111100
(r) ← (r) + 1 DDD = A

(A) ← (A) + 1 = 25 + 1 = 26

(F) = 0 0 0 0 0 0 1 0 = 0 2

(PC) = 3004

MEM 3004: JP (inmediato, #3)

¿S = 0? → SI ➔ SALTA ➔ (PC) = 3003

MEM 3003: INR r

(A) = 26 + 1 = 27

(F) = 0 0 0 0 0 1 1 0 = 0 6

(PC) = 3004

MEM 3004: JP

¿S = 0? ⟶ SI ➔ SALTA ➔ (PC) = 3003

MEM 3003: ….

MEM 3004: ….

NOTA: SISTEMA EN LOOP **hasta que S sea igual a "1"**. Esto ocurrirá cuando:

(A) = 1 0 0 0 0 0 0 0 = 8 0

(F) = 1 0 0 1 0 0 1 0 = 9 2

(PC) = 3004

MEM 3004: JP

¿S = 0? → NO ➔ NO SALTA ➔ (PC) = 3007

MEM 3007: HLT (#1) stop (PC) = 3008

FINALMENTE:

REGISTROS

A	80	92	F
B	11	07	C
D	32	28	E
H	00	FF	L
PC	30 08		
SP	FB 00		

8)

MEMORIA	CONTENIDO	MNEMONICO
A0FA	50	
A0FB	D9	
--------	-----	----------
B000	3A	LDA addr
B001	FB	
B002	A0	
B003	2F	CMA
B004	B6	ORA M
B005	32	STA addr
B006	FE	
B007	DD	
B008	C3	JMP addr
B009	FE	
B00A	DD	
--------	-----	----------
DDFE	99	

REGISTROS

A	38	02	F
B	05	0B	C
D	15	33	E
H	A0	FA	L
PC	B0 00		
SP	FD 01		

Respuesta:

MEM B000: LDA addr (directo, #3)

(A)← ((byte 3) (byte 2)) = (A0FB) = D 9

(PC) = B003

MEM B003: CMA (#1)

(A)← (A') (A) = 1 1 0 1 1 0 0 1
(A') = 0 0 1 0 0 1 1 0

(A) ←[D9]' = 2 6

(PC) = B004

MEM B004: ORA M (reg. Indirecto, #1)

(A) ← (A) + ((H) (L)) = (A) "or" (A0FA) = 26 + 50 = 76

(F) = 0 0 0 0 0 0 1 0 = 0 2

```
   00100110
"OR" + 01010000
   01110110
```

(PC) = B005

MEM B005: STA addr (directo, #3)

((byte 3) (byte 2)) ←— (A)

(DDFE) ←— (A) ➔ (DDFE) = 76

(PC) = B008

MEM B008: JMP addr (inmediato, #3)

(PC) ←(byte 3) (byte 2) ➔ (PC) = DDFE

MEM DDFE: Como (DDFE) = 76 y éste es el código del mnemónico HLT, la máquina se detiene.

(PC) = DDFF

FINALMENTE:

REGISTROS

A	76	02	F
B	05	0B	C
D	15	33	E
H	A0	FA	L
PC	DD	FF	
SP	FD	01	
(DDFE)	7	6	

9)

MEMORIA	CONTENIDO	MNEMONICO
4104	31	LXI SP, data 16
4105	04	04
4106	FF	FF
4107	39	DAD SP
4108	33	INX SP
4109	F9	SPHL
410A	3B	DCX SP
410B	E3	XTHL
410C	76	HLT
-------	----	----------
FF0D	47	47
FF0E	C3	C3

REGISTROS

A	1E	06	F
B	00	D3	C
D	57	00	E
H	00	0A	L
PC	41	04	
SP	F0	00	

Respuesta:

MEM 4104: LXI SP data 16 (inmediato, #3)

(rh)⟵ (byte 3) , (rl) ⟵ (byte 2)

(SPh) = F F (SPl) = 0 4

∴ (SP) = FF04

(PC) = 4107

MEM 4107: DAD SP (registro; #1)

(H)(L) ⟵(H)(L) + (rh)(rl) = (H)(L) + (SP)

(H)(L) = 000A + FF04 = FF0E ➔

(H) = FF , (L) = 0E

(F) = 0 0 0 0 0 1 1 0 = 0 6

(PC) = 4108

MEM 4108: INX SP (registro, #1)

(rh)(rl)⟵ (rh)(rl) + 1

(SP) ⟵(SP) + 1 = FF04 + 1 = FF05

(PC) = 4109

MEM 4109: SPHL (reg., #1)

(SP) ⟵(H)(L) = FF0E

(PC) = 410A

MEM 410A: DCX SP (reg., #1)

(rh)(rl)⟵ (rh)(rl) – 1

(SP) ⟵(SP) - 1 = FF0E - 1 = FF0D

(PC) = 410B

MEM 410B: XTHL (reg. Indirecto, #1)

(L) ⇔ ((SP)) (H) ⇔ ((SP) + 1)

(L) ⇔ (FF0D) (H) ⇔ (FF0E)

(L) = 47 (H) = C3 (FF0D) = 0E (FF0E) = FF

(PC) = 410C

MEM 410C: HLT (#1) stop (PC) = 410D

FINALMENTE:

REGISTROS

A	1E	06	F
B	00	D3	C
D	57	00	E
H	C3	47	L
PC	41	0D	
SP	FF	0D	
(FF0D)	0	E	
(FF0E)	F	F	

10)

MEMORIA	CONTENIDO	MNEMÓNICO
6001	3E	MVI r,data
6001	74	74
6002	F6	ORI, data
6003	2E	2E
6004	EA	JPE, addr
6005	09	09
6006	60	60
6007	AE	XRA M
6008	37	STC
6009	32	STA addr
600A	01	01
600B	60	60
600C	11	LXI D, data 16
600D	33	33
600E	20	20
600F	76	HLT

REGISTROS
(A)= 00 (F)= 46
(B)= 00 (C)= 00
(D)= 00 (E)= 00
(H)= 60 (L)= 0E
(PC)= 6000
(SP)= F10A

Respuesta:

MEM 6000: MVI r, data (inm., #2) 0 0 1 1 1 1 1 0
DDD = A

(r) ⟵(byte 2) ➔ (A)= 74

(PC)= 6002

MEM 6002: ORI data (inm., # 2)

(A) ← (A) + (byte 2) = 7 4 + 2 E = 7 E

(F)= 0 0 0 0 0 1 1 0 = 06

01110100
"OR" + 00101110
01111110

(PC)= 6004

MEM 6004: JPE addr (inm., #3)

¿P= 1? → Si ➔ SALTA ➔ (PC)= 6009

MEM 6009: STA addr (directo, #3)

((byte 3) (byte 2)) ⟵ (A)

(6001) = 7E

(PC)= 600C

MEM 600C: LXI D, data 16 (inmediato, #3)

(rh) ⟵ (byte 3) , (rl) ⟵ (byte 2)

(D) ⟵ (byte 3) ➔ (D) = 20

(E) ⟵ (byte 2) ➔ (E) = 33

(PC) = 600F

MEM 600F: HLT (#1) stop (PC)= 6010

FINALMENTE:

REGISTROS

A	7E	06	F
B	00	00	C
D	20	33	E
H	60	0E	L
PC	60 10		
SP	F1 0A		
(6001)	7 E		

11)

MEMORIA	CONTENIDO	MNEMONICO
6F00	D6	SUI data
6F01	08	08
6F02	F2	JP addr
6F03	00	00
6F04	6F	6F
6F05	3F	CMC
6F06	76	HLT

REGISTROS

A	0C	17	F
B	48	93	C
D	C1	AB	E
H	D3	2A	L
PC	6F 00		
SP	EF 00		

Respuesta:

Mem. 6F00: SUI data (inm., #2)

(A) ← (A) – (b2) = 0 C – 0 8 = 0 4

(F) = 0 0 0 1 0 0 1 1 = 13

(PC) = 6F02

00001100
- 00001000

00001100
+11111000
1 / 00000100

Mem. 6F02: JP (inm., #3)

¿S = 0? → SI ➔ SALTA ➔ (PC) ← (b 3) (b 2)

(PC) = 6F00

Mem. 6F00: SUI data (inm., #2)

(A) ← 04 – 08 = FC

(F) = 1 0 0 0 0 1 1 0 = 8 6

00000100
- 00001000

00000100
+ 11111000
11111100

(PC) = 6F02

Mem. 6F02: JP(inm., #3)

¿S= 0?→ NO ➔ NO SALTA ➔ (PC) = 6F05

Mem. 6F05: CMC (# 1)

(Cy) ← ($\bar{C}$y) ===> (F) = 1 0 0 0 0 1 1 1 = 8 7

(PC) = 6F06

Mem. 6F06: HLT

(PC) = 6F07

FINALMENTE:

REGISTROS

A	FC	87	F
B	48	93	C
D	C1	AB	E
H	D3	2A	L
PC	6F 07		
SP	EF 00		

12)

MEMORIA	CONTENIDO	MNEMONICO
7008	EA	JPE
7009	0C	
700A	70	
700B	2F	CMA
700C	0F	RRC
700D	C3	JMP
700E	25	
700F	70	
---	---	
7025	76	

REGISTROS

A	17	03	F
B	00	00	C
D	00	0E	E
H	00	00	L
PC	70 08		
SP	F0 01		

Respuesta:

Mem. 7008: JPE (inm.,#3) F= 00000011 = 03
P

¿P = 1? → NO ➔ NO SALTA

(PC) = 700B

Mem. 700B: CMA (#1)

(A) = 17 = 00010111

(A') = 11101000 = E8

➔ (A) = E 8

(PC) = 700C

Mem. 700C: RRC (#1)

$(A_n) \leftarrow (A_{n+1})$ $(A_7) \leftarrow (A_0)$ $(C_y) \leftarrow (A_0)$

(A) = E 8 = 1 1 1 0 1 0 0 0

➔ (A) = 0 1 1 1 0 1 0 0 = 7 4

$(C_y) = 0$ ➔ (F) = 0 0 0 0 0 0 1 0 = 0 2

(PC) = 700D

Mem. 700D: JMP (inm., #3)

(PC) ← (byte 3)(byte 2) ➔ (PC) = 7025

Mem. 7025: 76 ≡ HLT ➔ STOP

(PC) = 7026

FINALMENTE:

REGISTROS

A	74	02	F
B	00	00	C
D	00	0E	E
H	00	00	L
PC	70 26		
SP	F0 01		

13)

MEMORIA	CONTENIDO	MNEMONICO
8FFF	EB	XCHG
9000	3F	CMC
9001	9E	SBB M
9002	DA	JC
9003	06	
9004	90	
9005	3F	CMC
9006	17	RAL
9007	91	SUB r
9008	76	
9009	84	

REGISTROS

A	24	86	F
B	2D	E1	C
D	04	67	E
H	90	00	L
PC	90 00		
SP	EF 00		

Respuesta:

Mem. 9000: CMC (#1)

(G) = 86 ➔ (F) = 1 0 0 0 0 1 1 0 ➔ (Cy) = 0 ➔ (Cy)' = 1

(Cy actual) = 1 ➔ (F) = 1 0 0 0 0 1 1 1 = 8 7

(PC) = 9001

Mem. 9001: SBB M (reg. Ind., #1)

(A) ⟵ (A) – ((H)(L)) – (Cy)

(A) ⟵ (A) – (9000) – (Cy)

(A) ⟵ 2 4 – 3 F – 1 = E 4

```
  00100100          00100100
- 00111111        + 11000001
                    11100101
                  + 11111111
                  1 11100100
```

(F)= 1 0 0 1 0 1 1 1 = 9 7

(PC) = 9002

Mem. 9002: JC (inm., #3)

¿Cy = !? ⟶ SI ➔ SALTA ➔ (PC) = 9006

Mem. 9006: RAL (#1)

$(A_{n+1}) \leftarrow (A_n)$ $(A_0) \leftarrow$ (Cy anterior) $(C_y$ actual$) \leftarrow (A_7)$

(A) = E 4 = 1 1 1 0 0 1 0 0

➔ (A) = 1 1 0 0 1 0 0 1 = C 9

(Cy actual) = 1 ➔ (F) = 1 0 0 1 0 1 1 1 = 9 7

(PC) = 9007

Mem. 9007: SUB r (reg., #1)

(A) $\leftarrow$ (A) – (r)

(A) $\leftarrow$ C 9 – E 1 = E 8

91 = 10010001
C

11001001		11001001
- 11100001		+ 00011111
		11101000

(F) = 1 0 0 1 0 1 1 0 = 9 6

(PC) = 9008

Mem. 9008: 76 ≡ HLT ➔ STOP

(PC) = 9009

FINALMENTE:

REGISTROS

A	E8	96	F
B	2D	E1	C
D	04	67	E
H	90	00	L
PC	90 09		
SP	EF 00		