Opcode | Representação | Descrição

-----------|------------------------|------------------------------------------------------------

00000101 | ADD M(X) | AC ← AC + MBR

00000111 | ADD |M(X)| | AC ← AC + MBR (valor absoluto)

00000110 | SUB M(X) | AC ← AC - MBR

00001000 | SUB |M(X)| | AC ← AC - MBR (valor absoluto)

00001011 | MUL M(X) | AC ← (MQ \* MBR)(0:39)

00001100 | DIV M(X) | MQ ← AC / MBR

00010100 | LSH | AC ← AC << 1

00010101 | RSH | AC ← AC >> 1

00010010 | STOR M(X,8:19) | Modifica campo da instrução esquerda

00010011 | STOR M(X,28:39) | Modifica campo da instrução direita

00001101 | JUMP M(X,0:19) | Salta para instrução esquerda

00001110 | JUMP M(X,20:39) | Salta para instrução direita

00001111 | JUMP+ M(X,0:19) | Salta se AC ≥ 0 (esquerda)

00010000 | JUMP+ M(X,20:39) | Salta se AC ≥ 0 (direita)

00001010 | LOAD MQ | AC ← MQ

00001001 | LOAD MQ,M(X) | MQ ← M(X)

00100001 | STOR M(X) | M(X) ← AC

00000001 | LOAD M(X) | AC ← M(X)

00000010 | LOAD -M(X) | AC ← -M(X)

00000011 | LOAD |M(X)| | AC ← |M(X)|

00000100 | LOAD -|M(X)| | AC ← -|M(X)|

Dados da memória:

0000111000000000011000000001000000000011

0000011000000000011000000101000000000011

0000011000000000010000001101000000000110

0000000000000000000000000000000000111010

0000000100000000010100000110000000000011

1000000000000000000000000000000110010000

1000000000000000000000000000000000001010

0001000000000000000100100001000000000101

0001010000000000000000010101000000000000

0000110100000000000000001110000000000000

🧮 1. Separação em Sinal e Binário (Dados)

Sinal | Binário

------|---------------------------------------

✅0 | 000111000000000011000000001000000000011

✅0 | 000011000000000011000000101000000000011

✅0 | 000011000000000010000001101000000000110

✅0 | 000000000000000000000000000000000111010

✅0 | 000000100000000010100000110000000000011

✅1 | 000000000000000000000000000000110010000

✅1 | 000000000000000000000000000000000001010

✅0 | 001000000000000000100100001000000000101

✅0 | 001010000000000000000010101000000000000

✅0 | 000110100000000000000001110000000000000

📌 2. Separação em 4 Partes (Instruções)

Opcode | End. memória esq. | Opcode 2 | End. memória dir.

----------|-------------------|-----------|---------------------

✅00001110 | 000000000110 | 00000001 | 000000000011

✅00000110 | 000000000110 | 00000101 | 000000000011

✅00000110 | 000000000100 | 00001101 | 000000000110

✅00000000 | 000000000000 | 00000000 | 000000111010

✅00000001 | 000000000101 | 00000110 | 000000000011

✅10000000 | 000000000000 | 00000000 | 000110010000

✅10000000 | 000000000000 | 00000000 | 000000001010

✅00010000 | 000000000100 | 00100001 | 000000000101

✅00010100 | 000000000000 | 00010101 | 000000000000

00001101 | 000000000000 | 00000011 | 100000000000

Respostas (número|instruções):

60135837699|JUMP M(6,20:39) ; LOAD M(3)

25776115715|SUB M(6) ; ADD M(3)

25774051334|SUB M(4) ; JUMP M(6,0:19)

58|INV M(0) ; INV M(58)

4300234755|LOAD M(5) ; SUB M(3)

-400|INV M(0) ; INV M(400)

-10|INV M(0) ; INV M(10)

68720660485|JUMP+ M(4,20:39) ; STOR M(5)

85899431936|LSH ; RSH

55834632192|JUMP M(0,0:19) ; LOAD |M(2048)|