Op Codes for CPU:

OPCODE	OPERATION
0	HALT
2	ADD
4	XOR
6	AND
8	Load
A	Load
C	STORE
E	BRANCH IF ZERO
3	L SHIFT
5	R SHIFT

Operation Syntax:

OPERATION	SYNTAX	DESC
HALT	00	Stop cpu
ADD	2X	Add R with M[X]
XOR	4X	Xor R with M[X]
AND	6X	And R with M[X]
Load	8X	R = X
Load	AX	R = M[X]
STORE	CX	M[X] = R
BRANCH IF ZERO	EX	PC = X
L SHIFT	3X	Shift R bits to Left (by X+1)
R SHIFT	5X	Shift R bits to Right (by X+1)

Sample Program for CPU:

1	AD/AE
2	36
3	E7
4	30
5	EA
6	00
7	83
8	CF
9	00
A	85
B	CF
C	00
D	01
E	02
F	00

Output:

M[F] = 3 when M[1] = AE

M[F] = 5 when M[1] = AD

(The program stores the instruction number of where the instruction cycle branches off instead of incrementing)

How to use CPU:

Enable ticks (ctrl + k). Make sure ticks are at 1 Hz.

Hold down step and wait till PC is set at desired address (stop when PC says 1).

Change the memory addresses and store Values/Instructions at those memory locations. (load program)

Disable ticks. Then change the tick manually till the clock cycle output is at execute write.

Make sure the clocks are low. Press ctrl + t if they aren't and go thru the above step again.

Hold down the Clock Run button and Enable ticks. Let go when the "On" Light turns green.

The loaded program will execute, and CPU will stop when it ends.