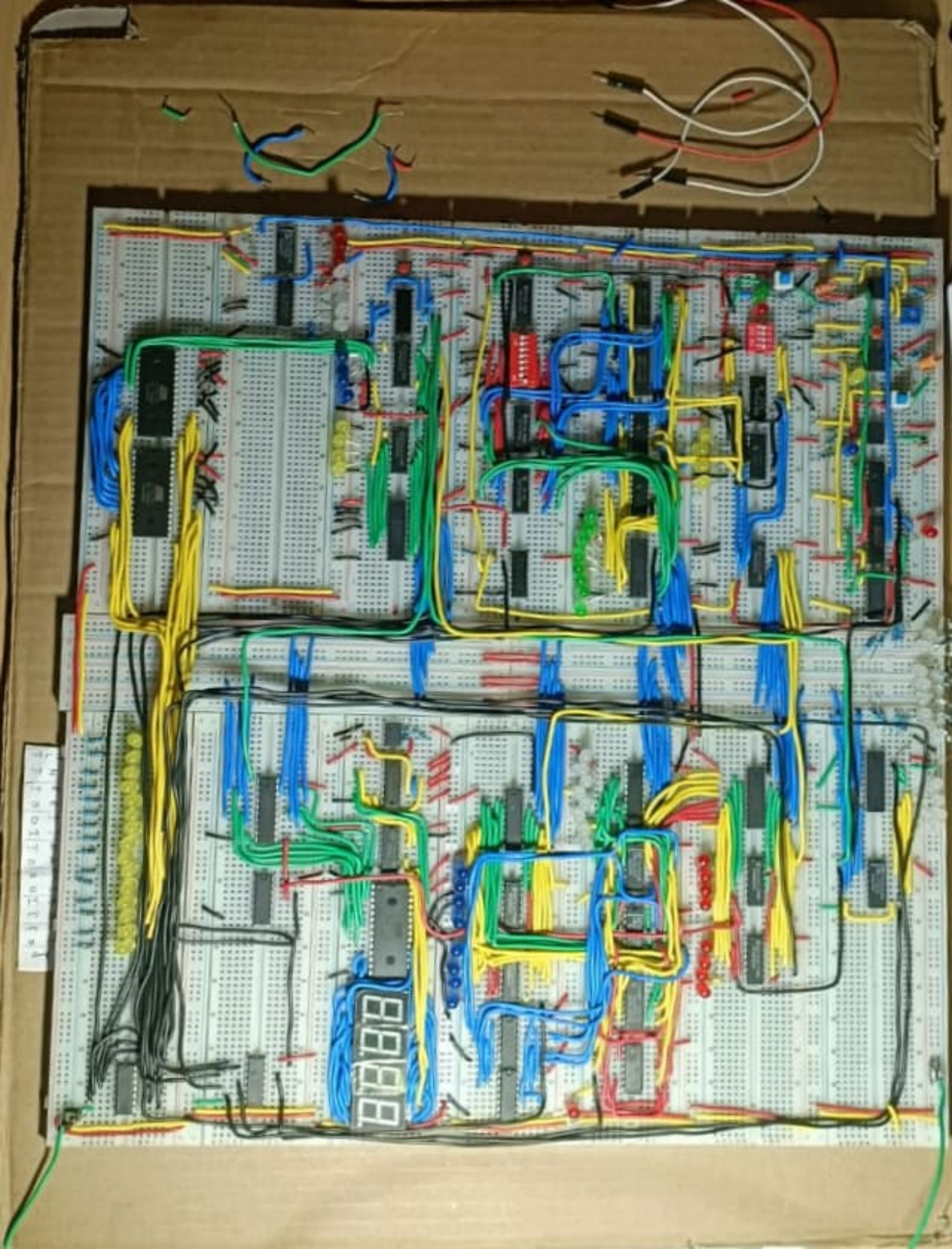
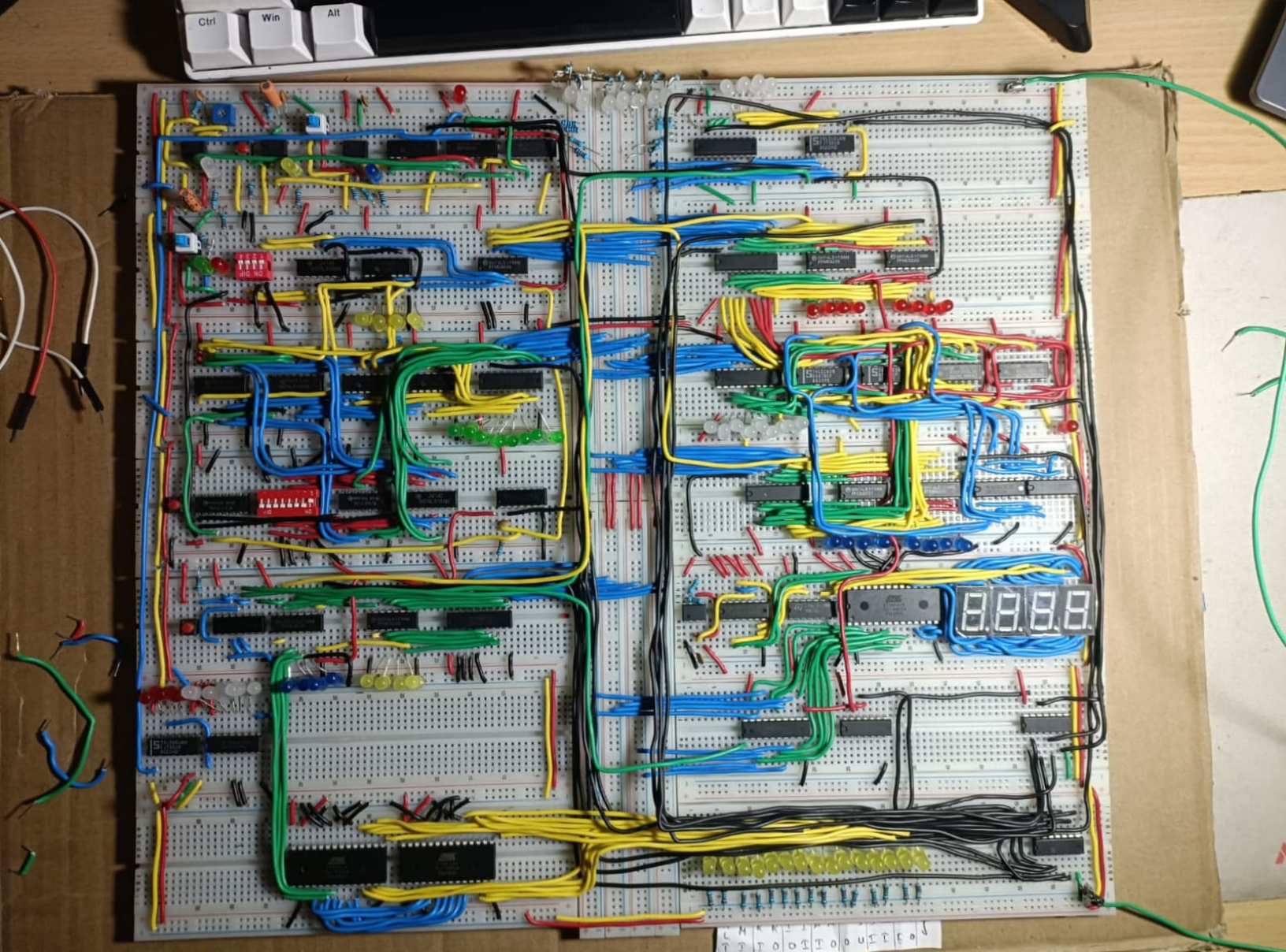
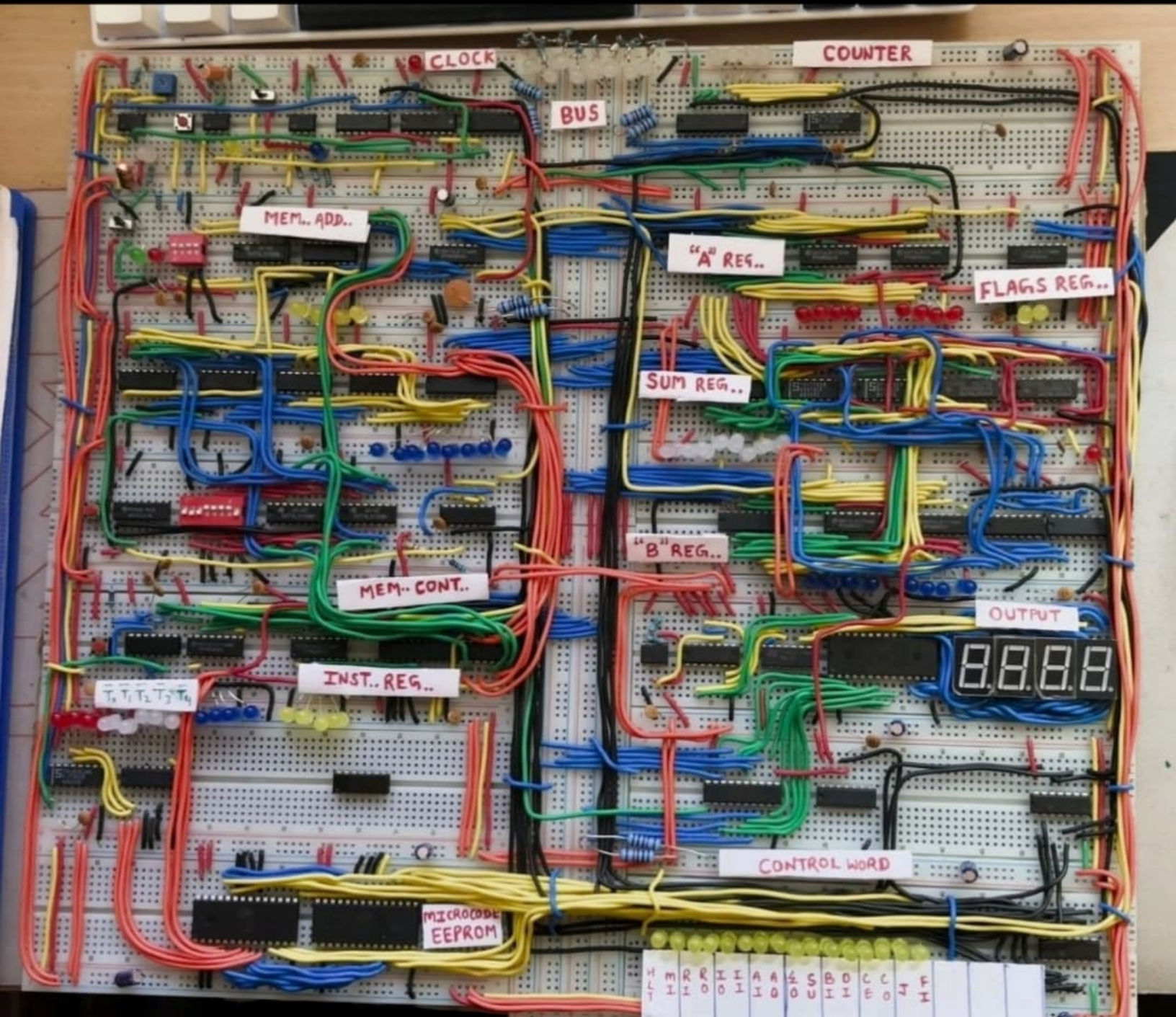



Ctrl
Win
Alt


CLOCK
COUNTER
BUS
MEM.. ADD..
"A" REG..
FLAGS REG..
SUM REG..
"B" REG..
MEM.. CONT..
OUTPUT
INST.. REG..
CONTROL WORD
MICROCODE EEPROM
HLT MI RI RO II IO AI AO SU SO BI EO CE J FI

INSTRUCTION	STEP	CF	ZF	HLT	MI	RI	RO	IO	II	AI	AO	EO	SU	BI	OI	CE	CO	J	FI
	1 1 1 0	0 0 0	X X	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0
OUT	1 1 1 0	0 0 1	X X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1 1 1 0	1 0 0	X X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1 1 1 1	0 1 0	X X	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HLT	1 1 1 1	0 1 1	X X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1 1 1 1	1 0 0	X X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Multiply

```
0 : LDA 14   → 0 0 0 1 1 1 1 0
1 : SUB 12   → 0 0 1 1 1 1 0 0
2 : JC 6     → 0 1 1 1 0 1 1 0
3 : LDA 13   → 0 0 0 1 1 1 0 1
4 : OUT      → 1 1 1 0 0 0 0 0
5 : HLT      → 1 1 1 1 0 0 0 0
6 : STA 14   → 0 1 0 0 1 1 1 0
7 : LDA 13   → 0 0 0 1 1 1 0 1
8 : ADD 15   → 0 0 1 0 1 1 1 1
9 : STA 13   → 0 1 0 0 1 1 0 1
10 : JMP 0   → 0 1 1 0 0 0 0 0
11 :
12 : 1       → 0 0 0 0 0 0 0 1
13 : Product → 0 0 0 0 0 0 0 0
14 : X       →
15 : Y       →
```

Fibonacci

```
LDI 1   > Y=1          0 1 0 1 0 0 0 1
STA 14                 0 1 0 0 1 1 1 0
LDI 0   > X=0          0 1 0 1 0 0 0 0
ADD 14  > Z=X+Y        0 0 1 0 1 1 1 0
STA 15                 0 1 0 0 1 1 1 1
LDA 14  > X=Y          0 0 0 1 1 1 1 0
STA 13                 0 1 0 0 1 1 0 1
LDA 15  > Y=Z          0 0 0 1 1 1 1 1
STA 14                 0 1 0 0 1 1 1 0
LDA 13                 0 0 0 1 1 1 0 1
OUT
JC 0                   1 1 1 0 0 0 0 0
JMP 3                  0 1 1 0 0 0 0 0
↳                      0 1 1 0 0 0 1 1
X
Y
Z
```

	INSTRUCTION	STEP	CF	ZF	HLT	MI	RI	RO	IO	II	AI	AO	ΣO	SU	BI	OI	CE	CO	J	FI
Fetch	X X X X	0 0 0	X	X	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0
	X X X X	0 1 0	X	X	0	0	0	1	0	1	0	0	0	0	0	1	0	0	0	
NOP	0 0 0 0	0 1 0	X	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	0 0 0 0	0 1 1	X	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	0 0 0 0	1 0 0	X	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
LDA	0 0 0 1	0 1 0	X	X	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	
	0 0 0 1	0 1 1	X	X	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	
	0 0 0 1	1 0 0	X	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
ADD	0 0 1 0	0 1 0	X	X	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	
	0 0 1 0	0 1 1	X	X	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	
	0 0 1 0	1 0 0	X	X	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1	
SUB	0 0 1 1	0 1 0	X	X	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	
	0 0 1 1	0 1 1	X	X	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	
	0 0 1 1	1 0 0	X	X	0	0	0	0	0	0	1	0	1	1	0	0	0	0	1	
STA	0 1 0 0	0 1 0	X	X	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	
	0 1 0 0	0 1 1	X	X	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	
	0 1 0 0	1 0 0	X	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
LDI	0 1 0 1	0 1 0	X	X	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	
	0 1 0 1	0 1 1	X	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	0 1 0 1	1 0 0	X	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
JMP	0 1 1 0	0 1 0	X	X	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	
	0 1 1 0	0 1 1	X	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	0 1 1 0	1 0 0	X	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
JC	0 1 1 1	0 1 0	0	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	0 1 1 1	0 1 0	1	X	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	
	0 1 1 1	0 1 1	X	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	0 1 1 1	1 0 0	X	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
JZ	1 0 0 0	0 1 0	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1 0 0 0	0 1 0	X	1	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	
	1 0 0 0	0 1 1	X	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1 0 0 0	1 0 0	X	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	