Grouping of 8008 Instruction codes for space-efficient 8008 – aim to reduce code space as much as possible to fit a MSP-EXP430FR4133

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Grouping** | **Binary** | **Mask (xx.. .xxx)** | **Mask (…x xxxx)** | **Notes** |
| INR | 00xx x000 | $00 | $00 | Not $00 |
| DCR | 00xx x001 | $01 | $01 | Not $01 |
| Rotate | 00xx x010 | $02 | $02 | Incomplete |
| ALU (Immediate) | 00xx x100 | $04 | $04 |  |
| RST | 00xx x101 | $05 | $05 | C/UC |
| MVI | 00xx x110 | $06 | $06 |  |
| RET | 00xx xx11 | $03,$07 | $03,$07 |  |
| IN/OUT | 01xx xxx1 | $41,$43,$45.$47 | $09,$0B,$0D,$0F |  |
| JUMP/CALL. | 01xx xxx0 | $40,$42,$44,$46 | $08,$0A,$0C,$0E | C/UC |
| ALU (Memory) | 10oo orrr | $80 … $87 | $10-$17 | C/UC |
| Register Moves | 11dd dsss | $C0 … $C7 | $18-$1F | Not $FF |

((OPC & 0xC0) >> 3) | (OPC & 0x07) compacts the opcode to the 5 bit grouping

(Except $00,$01,$ff which are all HALT)

A B C D E H L M are a byte array *registers[]*. M is filled/emptied as required.

16 bit array of program counters *pctrArray[]*, with a program counter index *pctrIndex.*

*pszValue* is the current value used for Parity Even, Sign and Zero flags.

*carry* is the carry flag which is 0 or 1

*halt* is the halt flag which is 0 or non-zero.

*cycles* counts cycles to a frame level.

*opcode* is the current opcode

500khz clock implies maybe 100khz running speed ?

1k of Static RAM (maybe in FRAM ?) in emulated machine, (400-7FF)

1k of ROM in FRAM (000-3FF)