Handy Special Register Subroutines

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Register operations are a general nuisance on the 8008, especially when using the H&L registers. The following subroutines are part of a new 2K operating system to be available through the Digital Group.

The first thing to do is to make up two jumper plugs to connect the eight Port 5 inputs to the eight Port 5 outputs, and the eight Port 4 inputs to the eight Port 4 outputs.

The next item is to reserve storage addresses 000006, 000007, and 000050 - 000056 as temporary storage locations for registers A through L.

Now the subroutines (addresses may be moved as desired):

Notes

"H&L Register Save" places the current H&L into storage positions 000055 and 000056. The A register is temporarily saved and later restored to permit its utilization without loss of its original contents.

"H&L Register Restore" retrieves the values of H&L registers previously stored in storage positions 000055 and 000056.

"H&L Swap with D&E" exchanges these register sets to double the memory accessing capabilities of the 8008.

"Register A - L Save" places the current A - L registers into storage positions 000050 - 000056. No registers are lost. in the operation. By placing this subroutine at the front of your storage dump routine, you can list off all 6 registers by simply sampling storage positions 000050 - 000056.

"Restore A - L Registers" loads registers A - L with the contents of storage positions 000050 - 000056. The former data in registers A - L is lost.

"Swap Current A - L Hegisters with Stored Ones" exchanges the current A - L Registers with those stored in storage positions 000050 - 000056. No data is lost in the exchange. The result of this operation is a 12 register microprocessor instead of a 6 register microprocessor.

Sincerely,

Robert

Dr. Robert Suding WØLMD

OCTAL ADDRESS	OCTAL CODE	OPERATION
001 000	***	H&L Register Save
001 001	133	Out 5 (Save A)
001 002	305	Load A with H
001 003	131	Out 4 (Save H)
001 004	306	Load A with L
001 005	056	Load H with 000
001 006	000	
001 007	066	Load L with 056
001 010	056	
001 011	370	Load Mem with A
001 012	061	Decrement. L
001 013	111	In 4 (Retrieve H)
001 014	370	Load Mem with A
001 015	113	In 5 (Restore A)
001 016	007	Heturn Uncond.
001 017		
001 020		
001 021	***	H&L Register Restore
001 022	133	Out 5 (Save A)
001 023	056	Load H with 000
001 024	000	
001 025	066.	Load L with 055
001 026	055	
001 027	307	Load A with Mem
001 030	131	Out 4 (Save H)
001 031	060	Increment L
001 032	367	Load L with Mem
001 033	111	In 4 (Retrieve H)
001 034	350	Load H with A
001 035	113	In 5 (Restore A)
001 036	007	Return
001 037		
001 040	***	H&L Swap with D&E
001 041	133	Out 5 (Save A)
001 042	305	Load A with H
001 043	353	Load H with 0
001 044	330	Load D with A
001 045	306	Load A wi-th L
001 046	364	Load L with E
001 047	340	Loacl E with A
001 050	113	In 5 (Restore A)
001 051	007	Return
001 052		
001 053		
001 054	***	Register A-L Save
001 055	133	Out 5 (Save A)
001 056	305	Load A with H
001 057	131	Out 4 (Save H)
001 060	306	Load A with L
001 061	056	Load H with 000
001 062	000	
001 063	066	Load L with 056
001 064	056	
001 065	370	Load Mem with A
001 066	061	Decrement L
001 067	111	Input 4 (Hetrieve H)
001 070	370	Load MeIn \'lith A
001 071	061	Decrement L
001 072	374	Load Mem wit.h E
001 073	061	Decrement L
001 074	373	Load Mem with D
001 075	061	Decrement L
001 076	372	Load Mem with C
001 077	061	Decrement L
001 100	371	Load Mem with B
001 101	061	Decrement L
001 102	113	Input 5 (Retrieve A)
001 103	370	Load Mem with A
001 104	007	Return
001 105		
001 106		
001 107	***	Restore A-L Registers
001 110	056	Load B with 000
001 111	000	
001 112	066	Load L with 050
001 113	050	
001 114	307	Load A with Mem
001 115	133	Out 5
001 116	060	Increment L
001 117	317	Load B with Mem
001 120	060	Increment L
001 121	327	Load C with Mem
001 122	060	Increment L
001 123	337	Load D with Mem
001 124	060	Increment L
001 125	347	Load E with Mem
001 126	060	Increment L
001 127	307	Load A with Mem
001 130	131	Out 4 (Save H)
001 131	060	Increment L
001 132	367	Load L with Mem
001 133	111	In 4 (Retrieve H)
001 134	350	Load H with A
001 135	113	In 5
001 136	007	Return
001 137		

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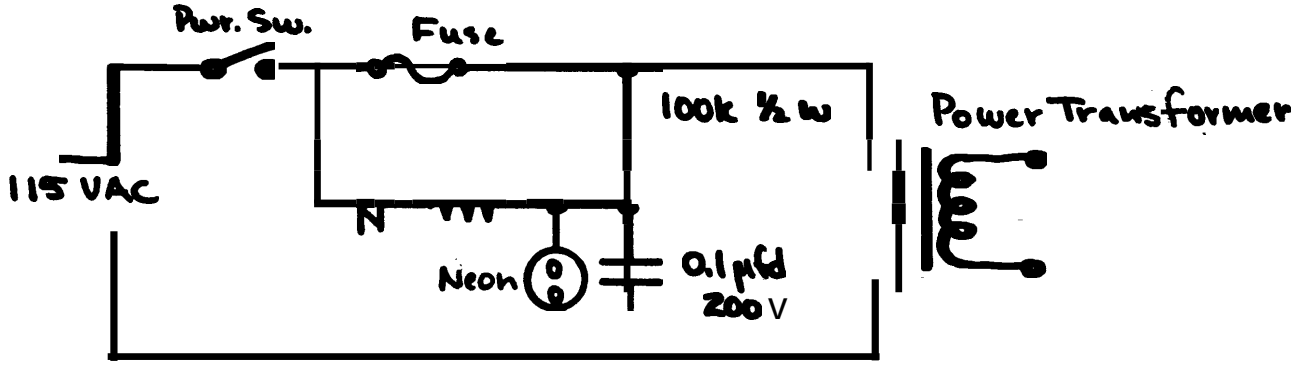
OCTAL ADDRESS	OCTAL CODE	OPERATION
001 140	***	Swap Current A-L
001 141		Regs with Saved Ones
001 142	133	Out 5 (Save A)
001 143	305	Load A with H
001 144	131	Out 4 (Save H)
001 145	056	Load H with 000
001 146	000	
001 147	306	Load A with L
001 150	0-66	Load L with 007
001 151	007	
001 152	370	Store A
001 153	066	Load L with 050
001 154	050	
001 155	307	Load A with Mem
001 156	066	Load L with 006
001 157	006	
001 160	370	Store A
001 161	066	Load L with 050
001 162	050	
001 163	113	In 5 (Retrieve A)
001 164	370	Store A
001 165	066	Load L with 006
001 166	006	
001 167	307	Load A with Mem
001 170	133	Out 5
001 171	301	Load A with B
001 172	066	Load L with 051
001 173	051	
001 174	317	Load B with Mem
001 175	370	Store A
001 176	302	Load A with C
001 177	060	Increraent L
001 200	327	Load C with Mem
001 201	370	store A
001 202	303	Load A with D
GOl 203	060	Increment L
001 204	337	Load D with Mem
001 20.5	370	Store A
001 2.06	304	Load A with E
001 207	060	Increlnent L
001 210	347	Load E with Mem
001 211	370	Store A
001 212	060	Increment L
001 213	307	Load A with Mem
001 214	066	Load L with 006
001 215	006	
OJl. 216	370	Store A
001 217	111	In 4 (Retrieve H)
GOI 220	066	Load L with 055
001 221	055	
001 222	370	Store A
001 223	060	Increment L
001 224	307	Load A with Mem
001 225	131	Out 4 (Save L)
001 226	066	Load L with 007
001 227	007	
001 230	307	Lc..'ad A with Mem
001 231	066	Load L with 056
001 232	056	
001 233	370	Store A
001 234	066	Load L with 006
001 235	006	
001 236	357	Load H with Mem
001 237	III	In 4 (Retrieve L)
OOI 240	360	Load L with A
001 241	113	In 5 (Retrieve A)
001 242	007	Return

PILOT LIGHT & BLOWN FUSE INDICATOR CIRCUIT 5/4/75



If fuse is good and power is one, neon lights all the time. If fuse blows, lamp flashes.

By Ted Lincoln WA6HWJ
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