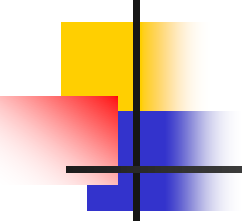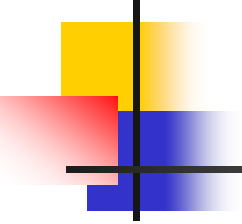# 3.7. Programmable Peripheral Interface (82C55)

- The 82C55 is a popular interfacing component.

- It can interface any TTL compatible I/O device to the microprocessor.

- It is used to interface the keyboard and a parallel printer port in PCs.

- It requires insertion of wait states if used with a microprocessor using higher that an 8 MHz clock.

3.7. Programmable Peripheral Interface (82C55)

- PPI has 24 I/O pins that are programmable in groups of 12 pins.

- It has three distinct modes of operation.

  - Mode 0: is the basic input/output mode.

  - Mode 1: is the strobed operations

  - Mode 2: is a bidirectional mode of operations.

3.7.1. Pinout of the 82C55 PPI

82C55

D0
D1
D2
D3
D4
D5
D6
D7

$\overline{RD}$
$\overline{WR}$
A0
A1
RESET
$\overline{CS}$

VCC
GND

PA0
PA1
PA2
PA3
PA4
PA5
PA6
PA7

PB0
PB1
PB2
PB3
PB4
PB5
PB6
PB7

PC0
PC1
PC2
PC3
PC4
PC5
PC6
PC7

Group A

Port A (PA7-PA0) and upper half of port C (PC7 - PC4)

Group B

Port B (PB7-PB0) and lower half of port C (PC3 - PC0)

I/O Port Assignments

A_1	A_0	Function
0	0	Port A
0	1	Port B
1	0	Port C
1	1	Command Register

3.7.2. Interfacing the 82C55 PPI
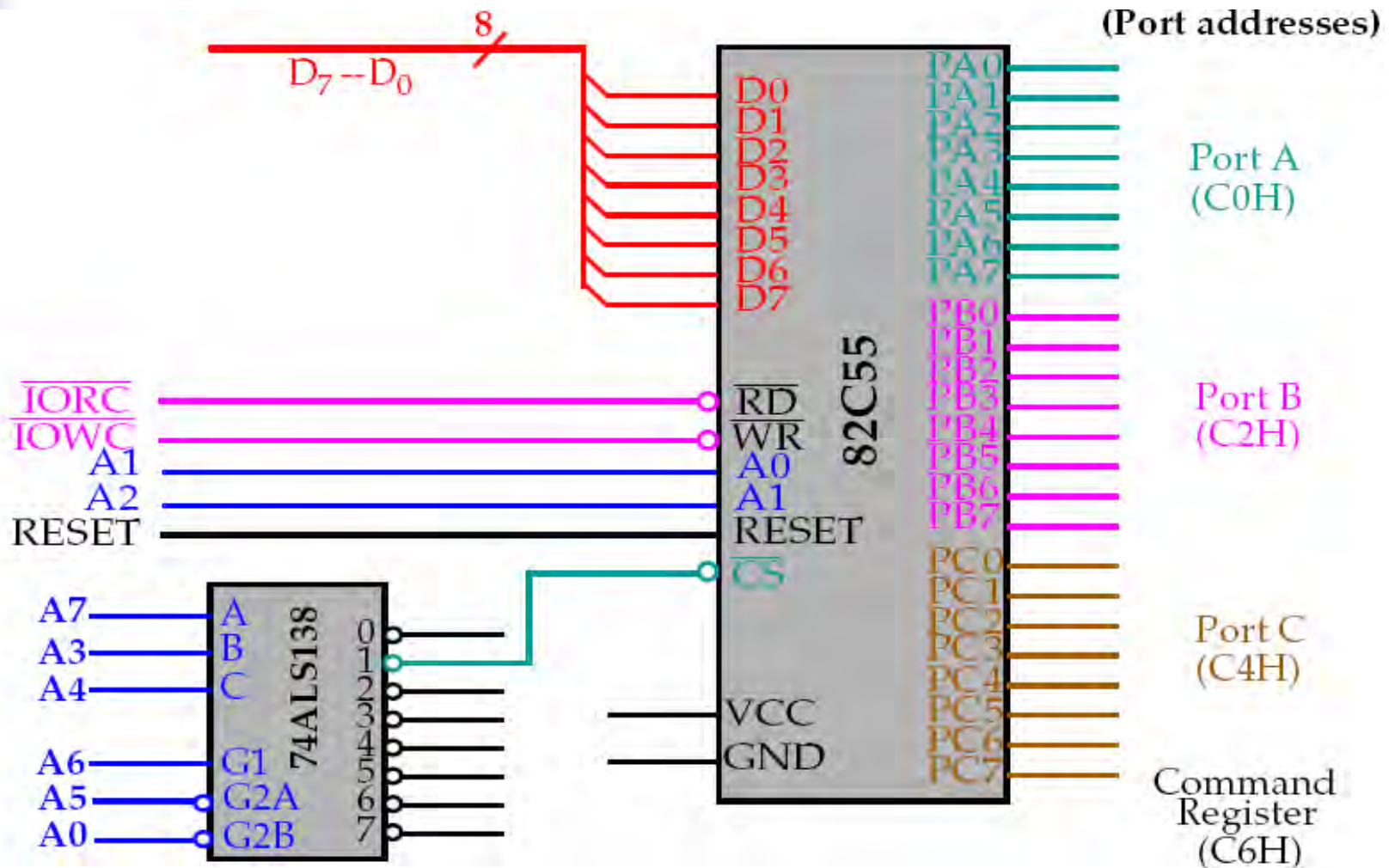
3.7.3. Programming the 82C55 PPI

Command Byte A (Programs ports A, B, C)

7	6	5	4	3	2	1	0
1							

Group A

Port C (PC7 - PC4)
1 = input
0 output

Port A
1 = input
0 = output

Mode
00 = mode 0
01 = mode 1
1x = mode2

Group B

Port C (PC3 - PC0)
1 = input
0 = output

Port B
1 = input
0 = output

Mode
0 = mode 0
1 = mode 1

Command Byte B (Sets or resets any bits in port C)

7	6	5	4	3	2	1	0
0	x	x	x				

Bit set/reset
1 = set
0 = reset

Selects a bit

3.7.4. Mode 0 Operation
3.7.4.1. 7-Segment LED Display

8-Digit Seven Segment LED Display Interface