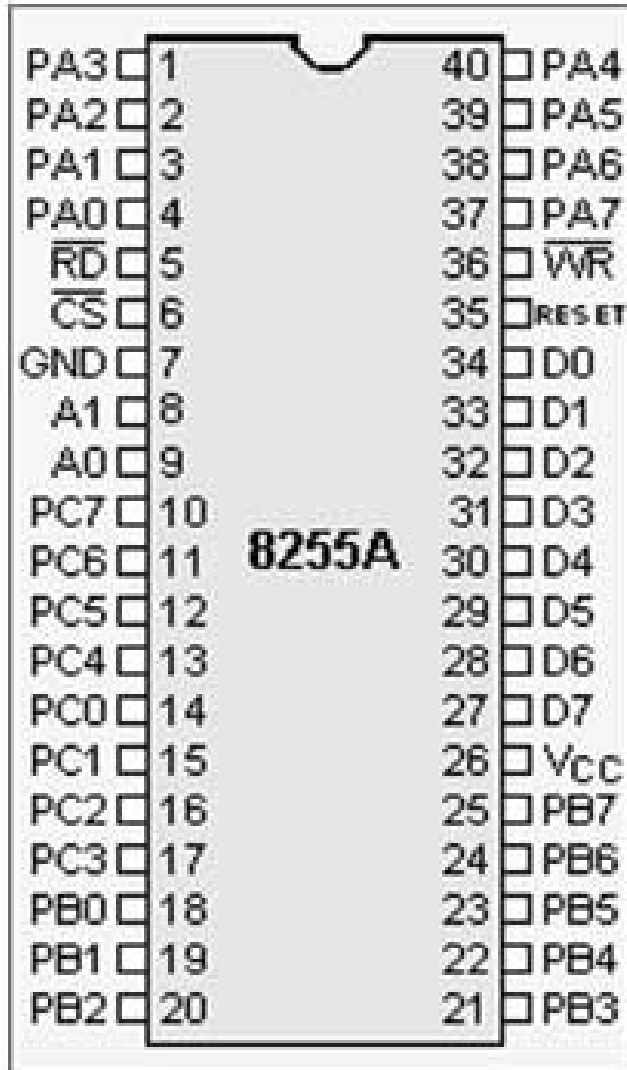
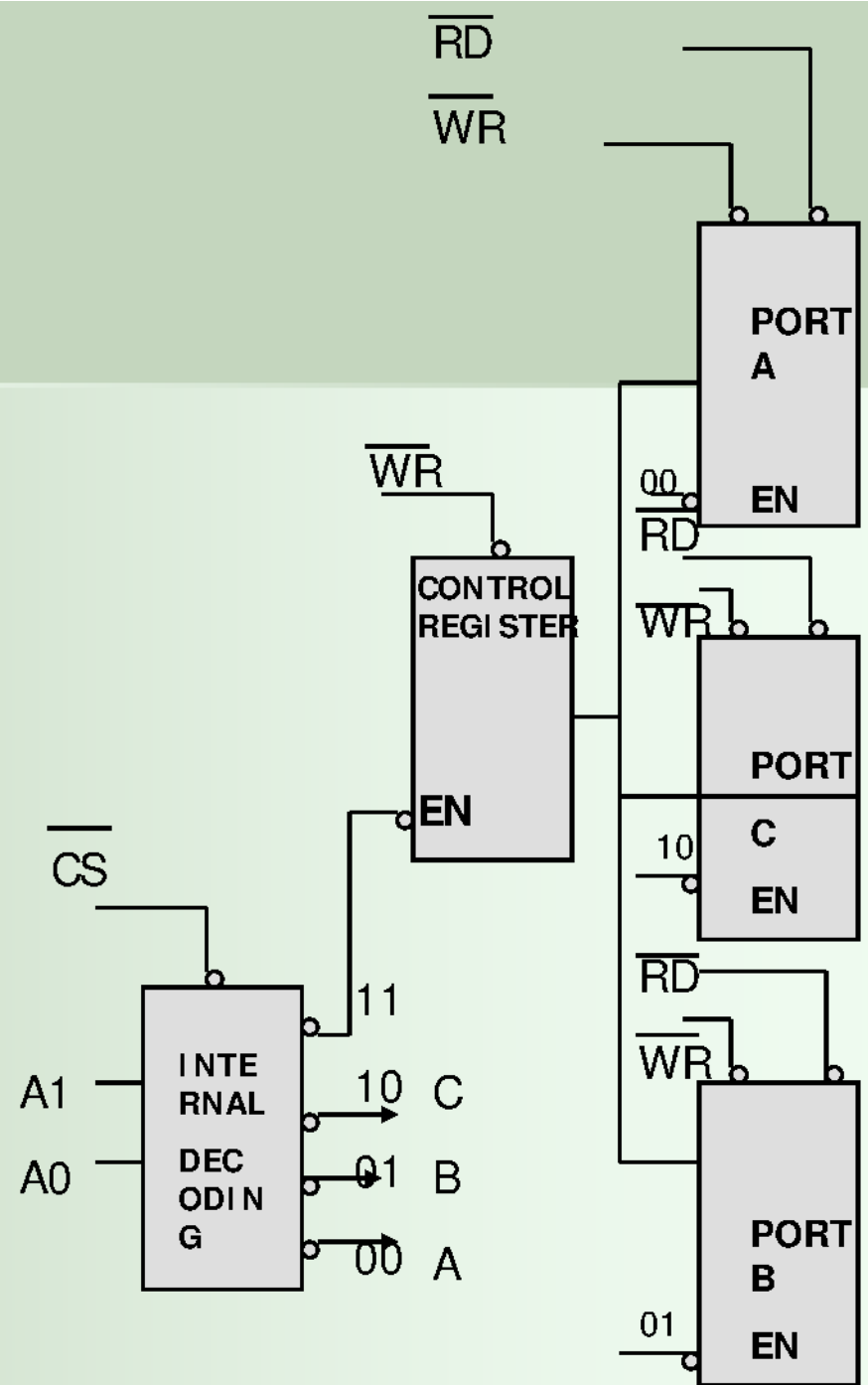
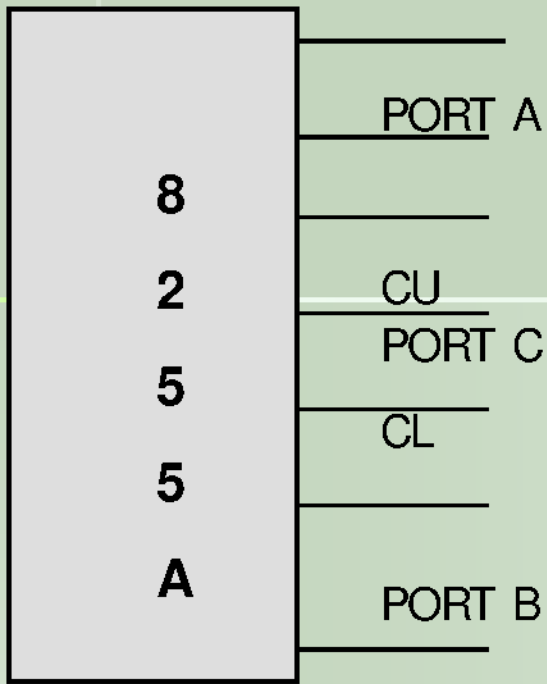


# 8255 Programmable Peripheral Interface LECTURE 1

# PIN DIAGRAM

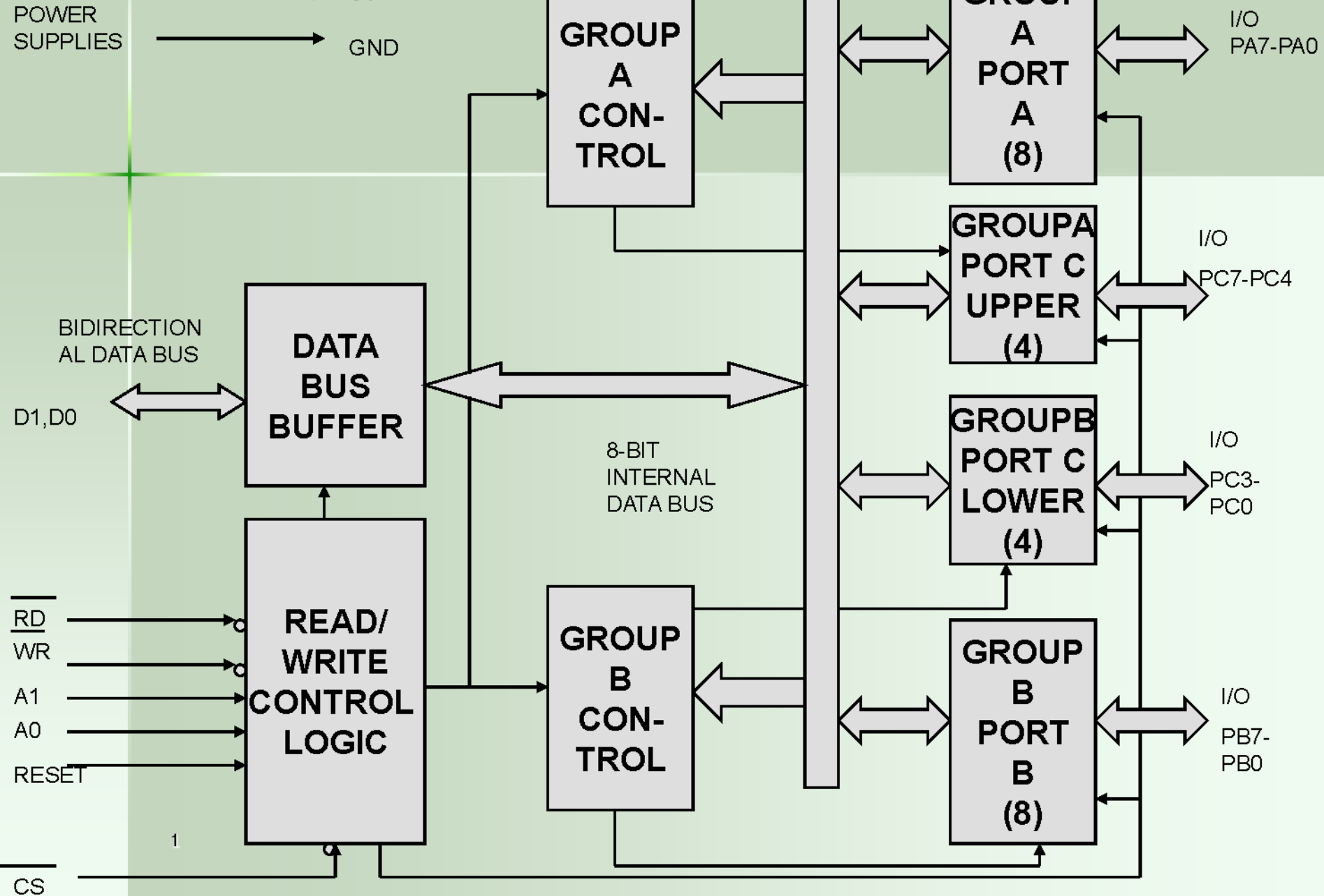


Pin	Description
D <sub>0</sub> - D <sub>7</sub>	Data lines
RESET	Reset input
$\overline{CS}$	Chip select
$\overline{RD}$	Read control
$\overline{WR}$	Write control
A <sub>0</sub> , A <sub>1</sub>	Internal address
PA <sub>7</sub> - PA <sub>0</sub>	Port-A pins
PB <sub>7</sub> - PB <sub>0</sub>	Port-B pins
PC <sub>7</sub> - PC <sub>0</sub>	Port-C pins
V <sub>CC</sub>	+5V
V <sub>SS</sub>	0V (GND)



1 Expanded version of control logic and I/O port

# 8255A



# CONTROL WORD

D7 D6 D5 D4 D3 D2 D1 D0

0/1

BSR MODE

BIT SET/RESET

FOR PORT C

NO EFFECT ON I/O

MODE

I/O MODE

MODE 0

SIMPLE I/O FOR  
PORTS

A, B AND C

MODE 1

HANDSHAKE  
I/O FOR  
PORTS A  
AND/OR B

PORT C BITS  
ARE USED  
FOR  
HANDSHAKE

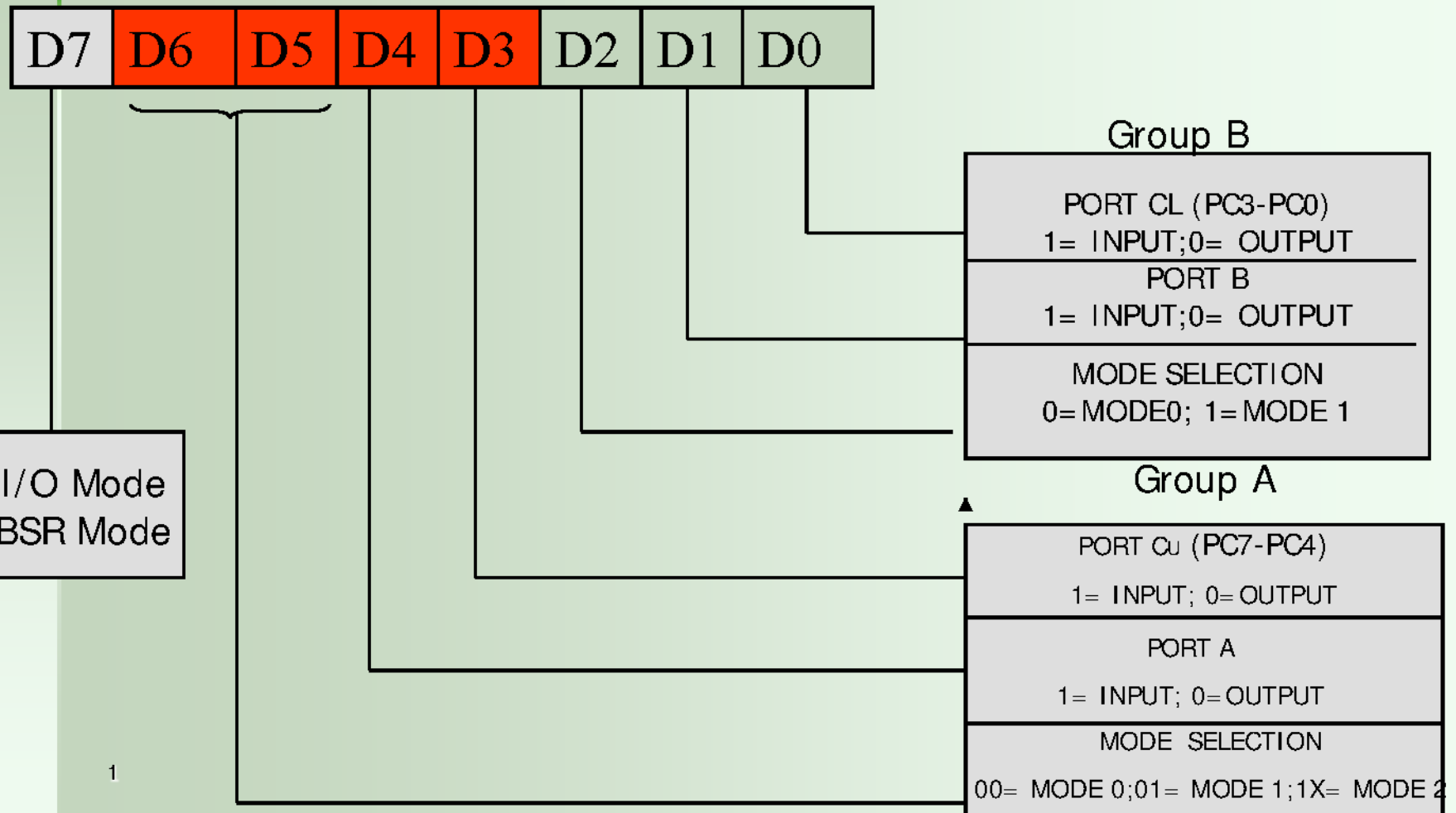
MODE 2

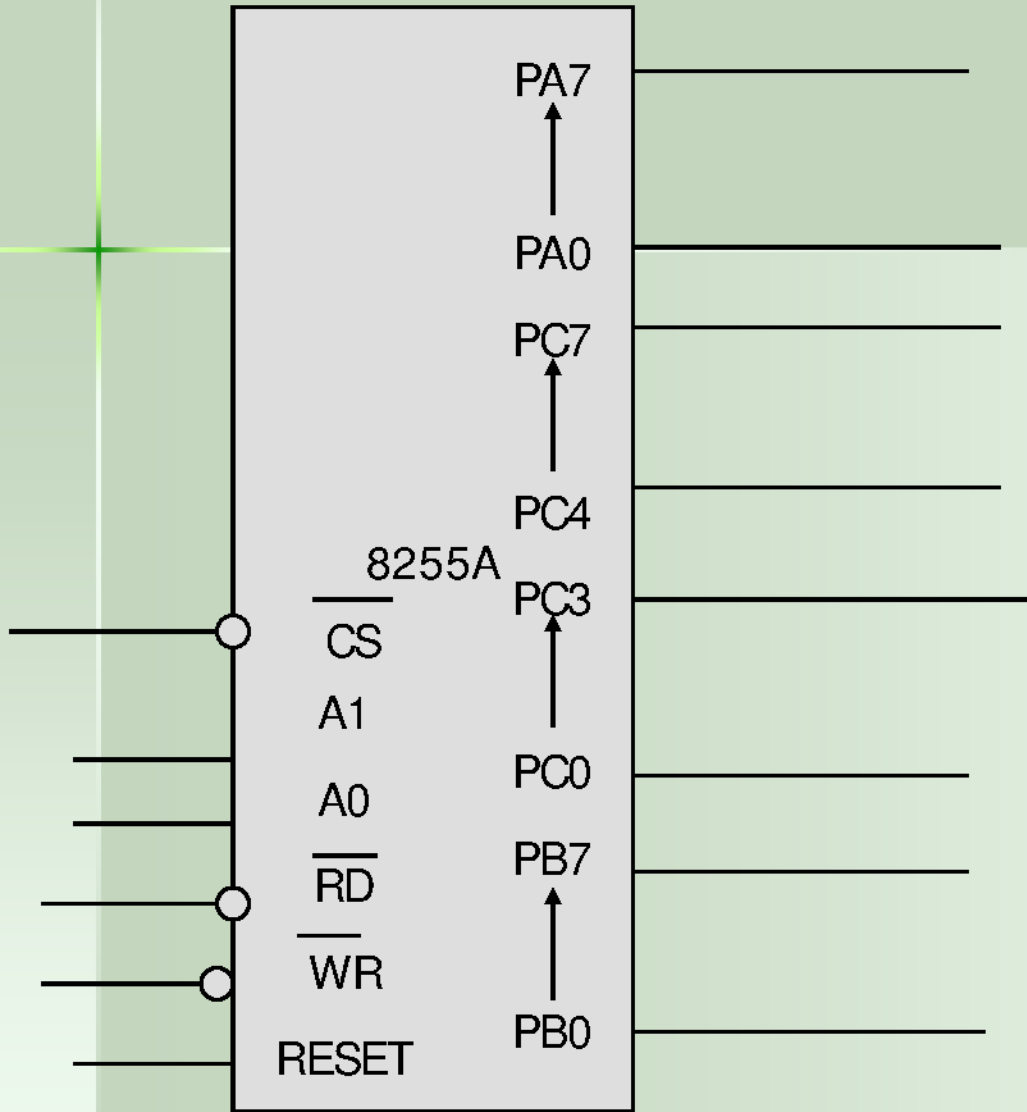
BIDIRECTI  
ONAL  
DATA BUS  
FOR PORT  
A

PORT B  
EITHER IN  
MODE 0 OR  
1

PORT C  
BITS ARE  
USED FOR  
HANDSHAK  
E

# Control Word Format for I/O Mode





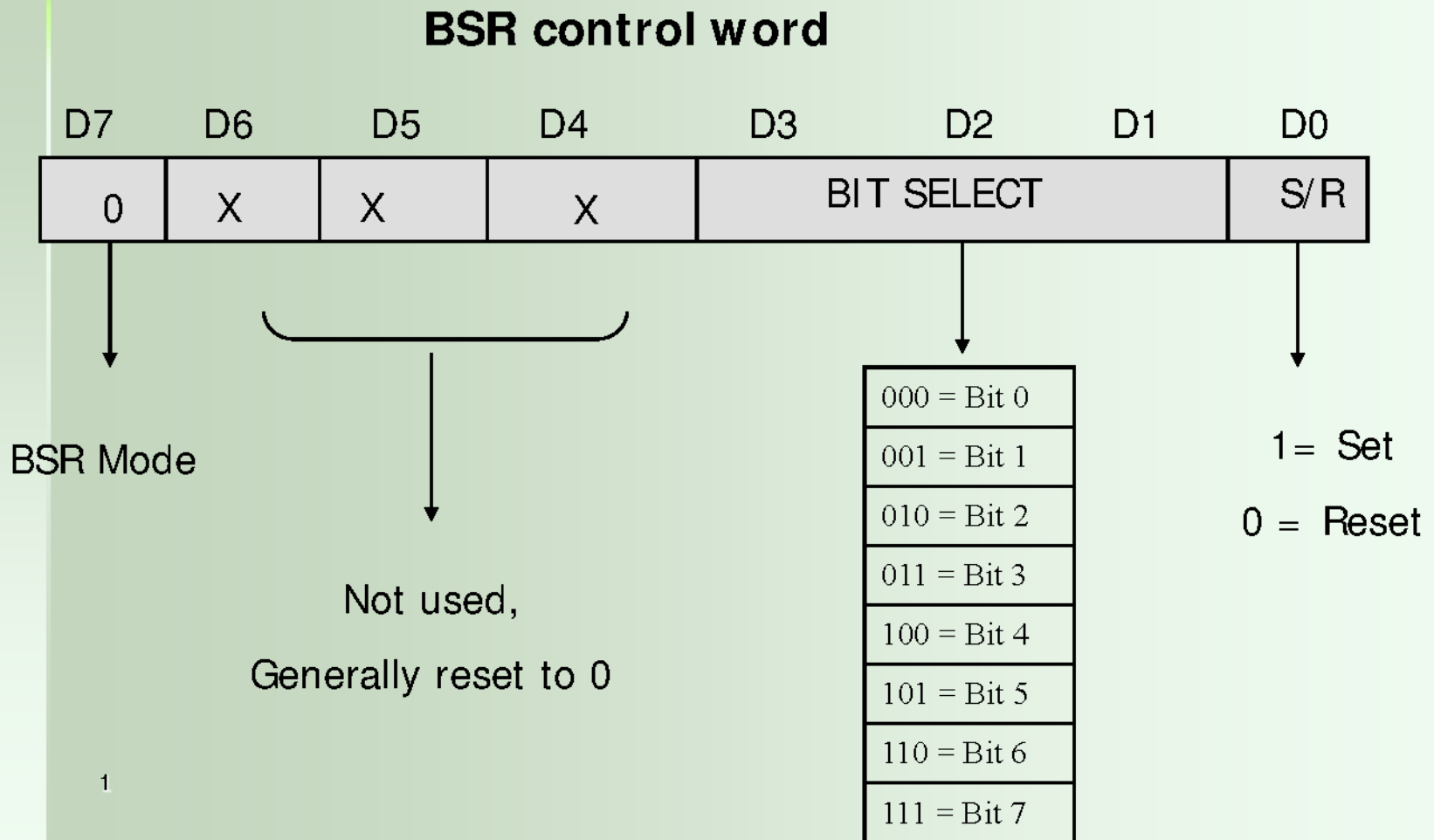
# Mode 0 ( Simple Input or Output )

## PROBLEM 1)

- Interface 8255a to a 8085 microprocessor using I/O-mapped - I/O technique so that Port a have address 80H in the system.
- Determine addresses of Ports B,C and control register.
- Write an ALP to configure port A and port C<sub>L</sub> as output ports and port B and port C<sub>U</sub> as input ports in mode 0.
- Connect DIP switches connected to the to input ports and LEDs to the output ports .
- Read switch positions connected to port A and turn on the respective LEDs of port b. Read switch positions of port C<sub>L</sub> and display the reading at port C<sub>U</sub>



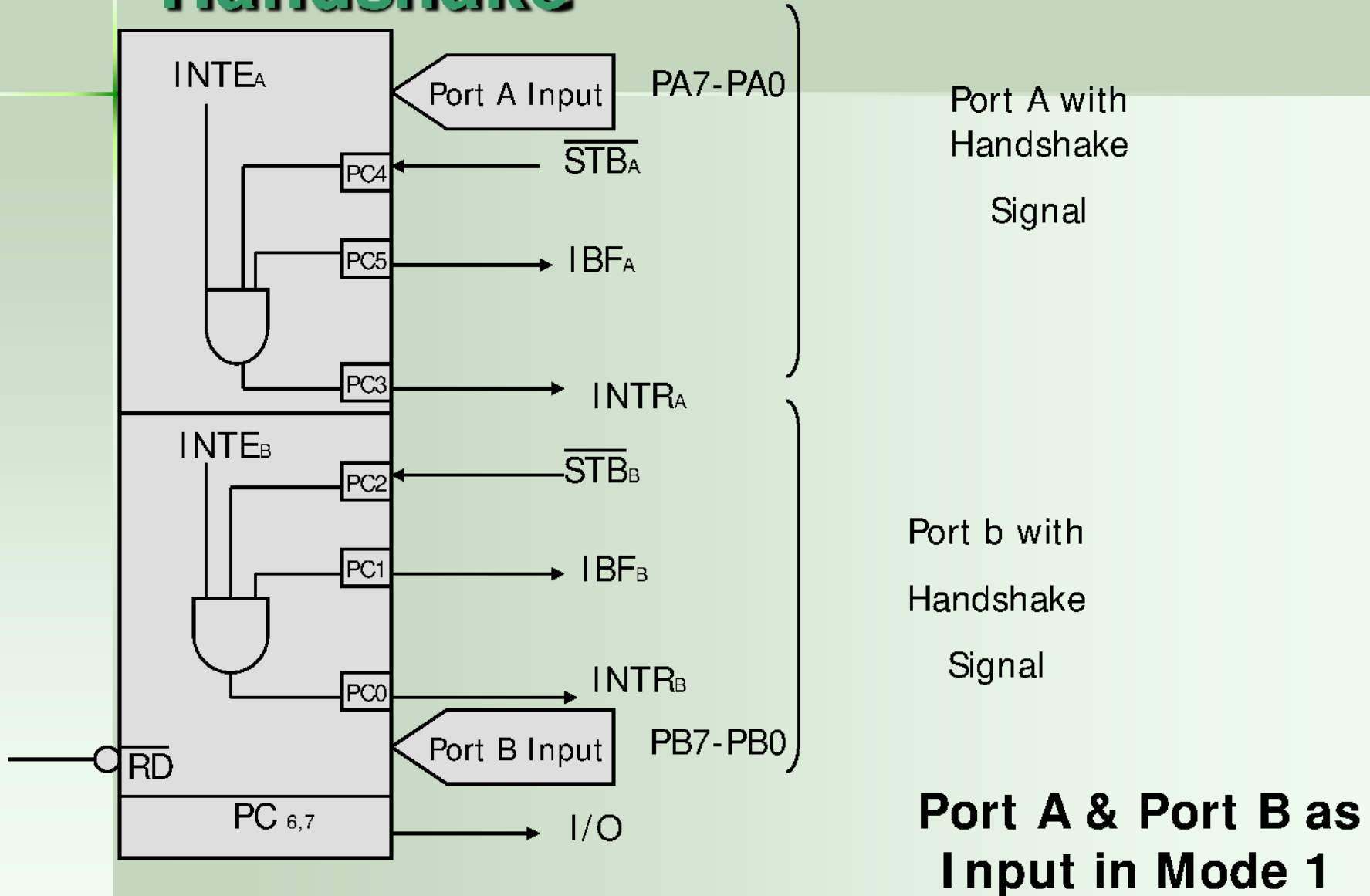
# BSR (Bit Set/Reset) Mode



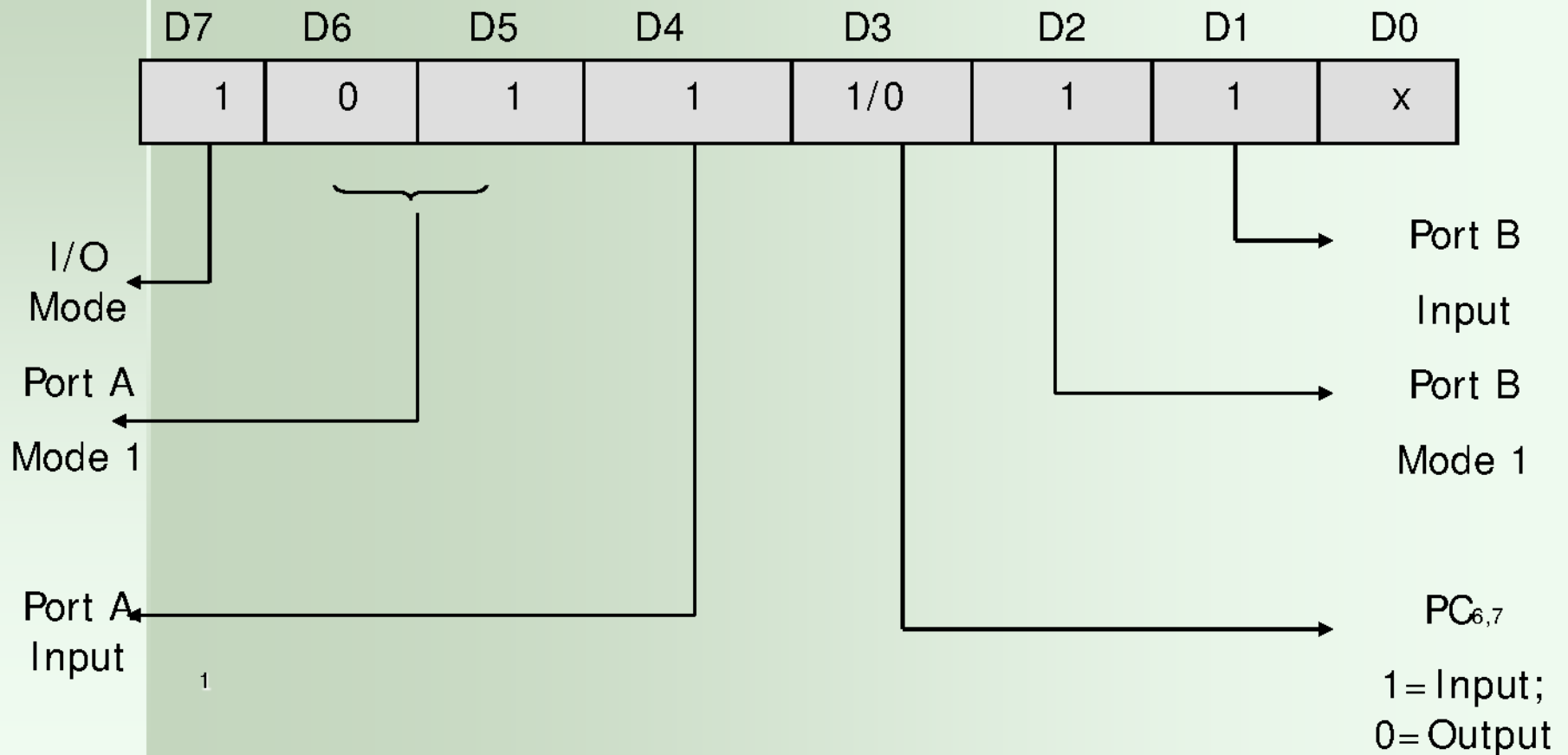
# Problem 2)

- Write an ALP to set bits PC7 and PC 3 and reset them after 10 ms in BSR mode.

# Mode 1: Input or Output with Handshake

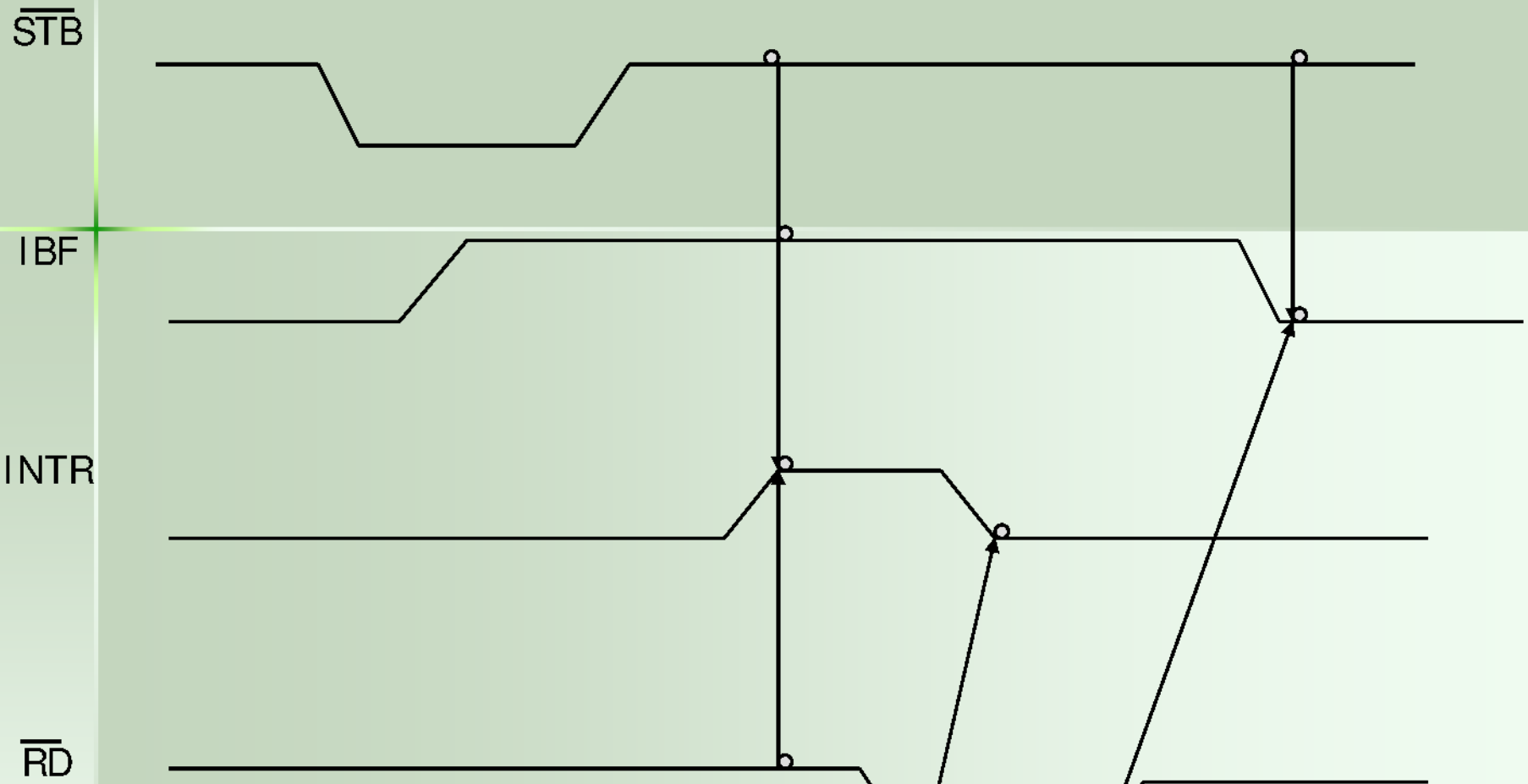


# Control word – mode 1 input



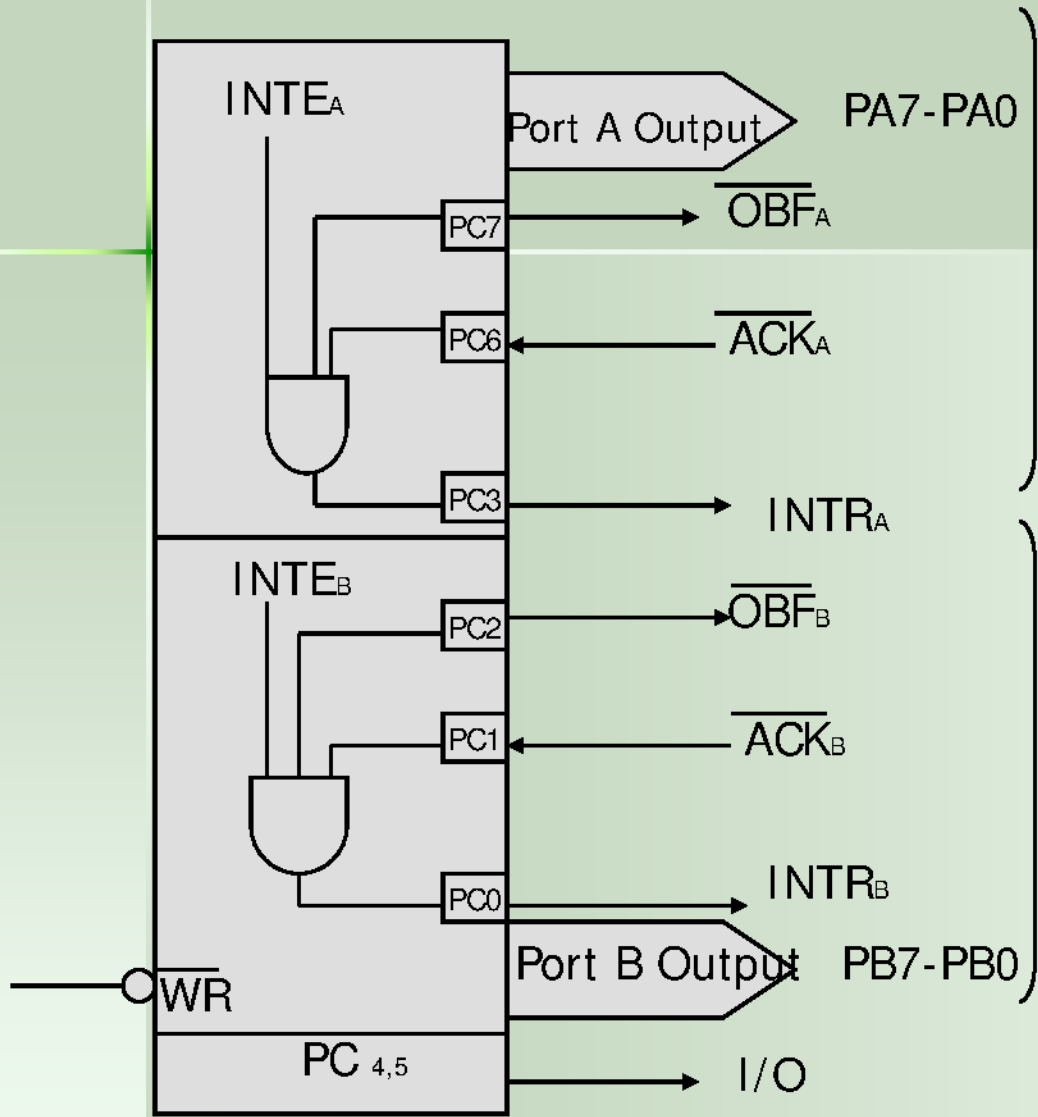
## Status Word – Mode 1 input

D7	D6	D5	D4	D3	D2	D1	D0
I/O	I/O	IBF <sub>A</sub>	INTE <sub>A</sub>	INTR <sub>A</sub>	INTE <sub>B</sub>	IBF <sub>B</sub>	INTR <sub>B</sub>



Input from peripheral 1



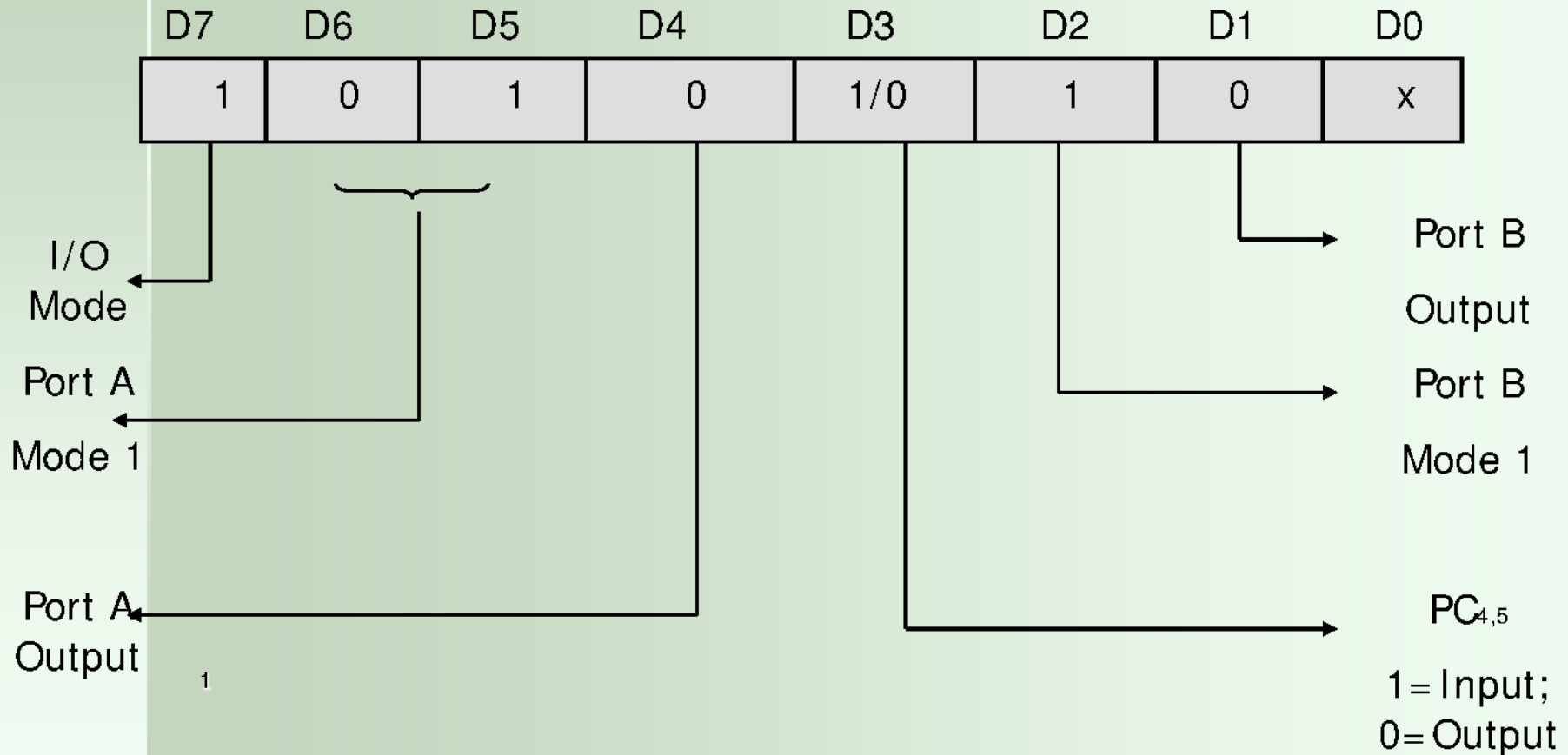


Port A with  
Handshake  
Signal

Port b with  
Handshake  
Signal

## Port A & B as Output In Mode 1

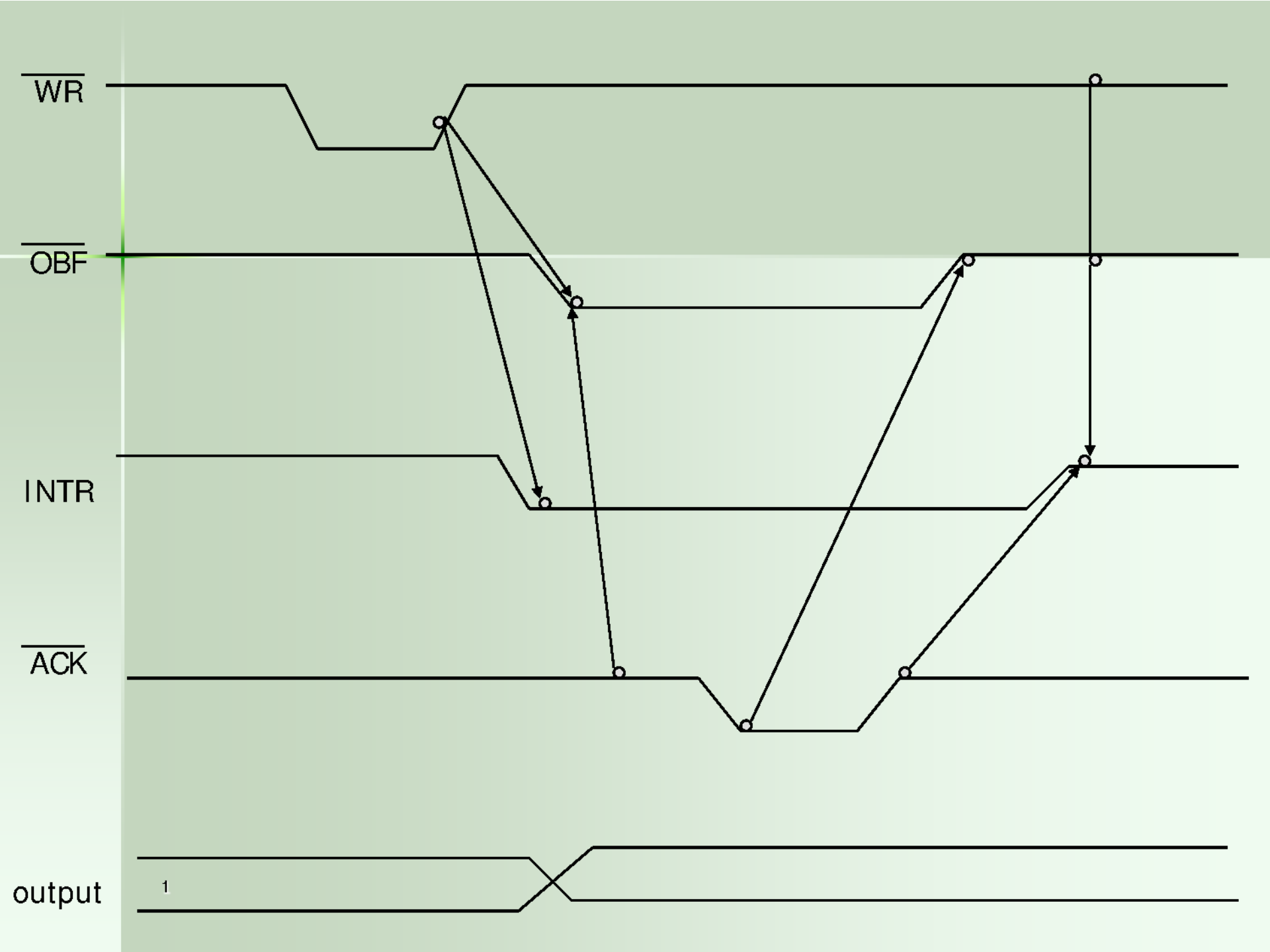
# Control word – mode 1 Output

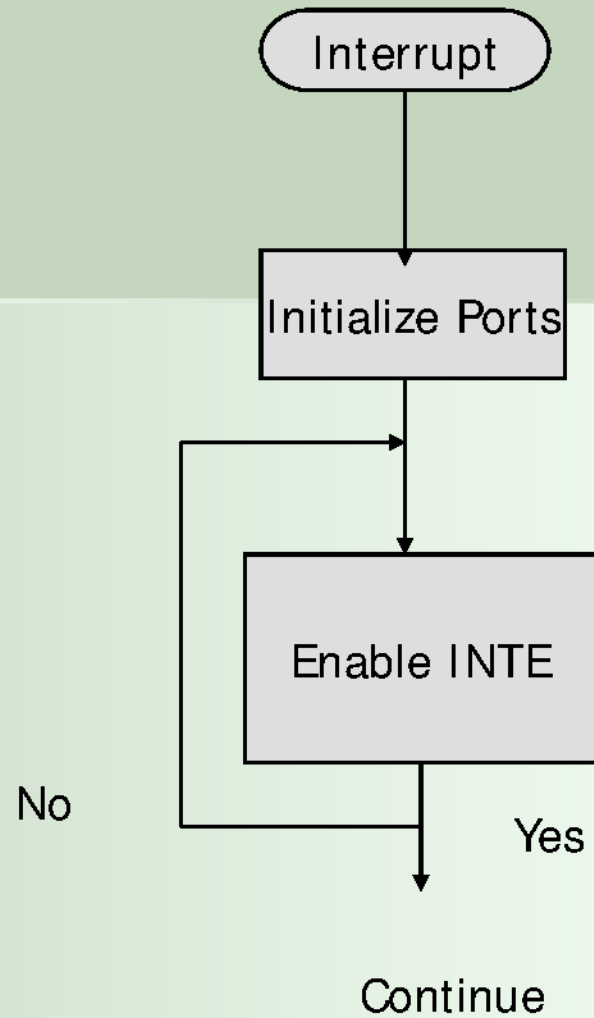
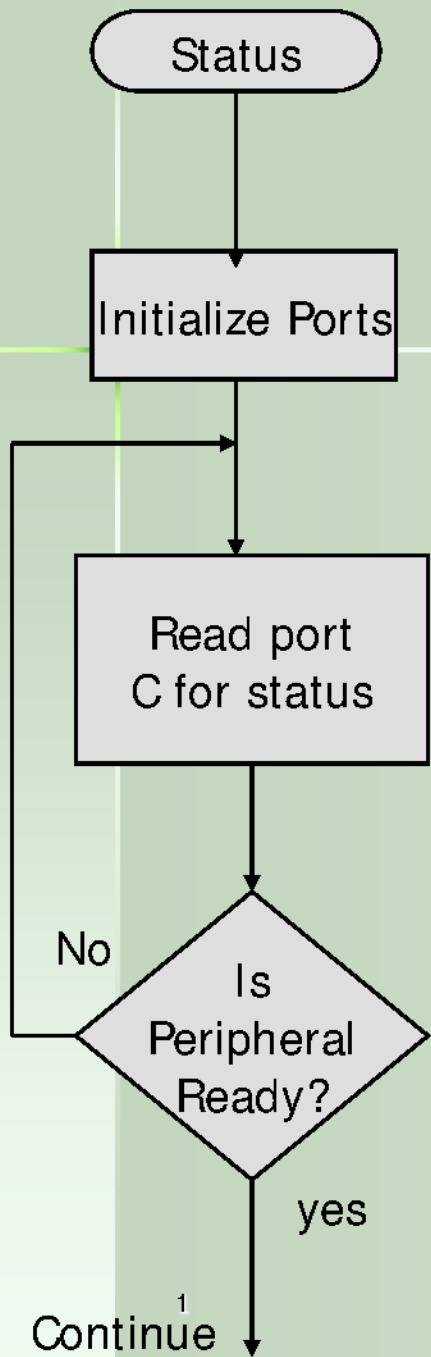




## Status Word – Mode 1 Output

D7	D6	D5	D4	D3	D2	D1	D0
$\overline{\text{OBF}}_A$	$\text{INTE}_a$	I/O	I/O	$\text{INTR}_A$	$\text{INTE}_B$	$\overline{\text{OBF}}_B$	$\text{INTR}_B$





# Problem 3)

- Initialize 8255A in mode 1 to configure Port A as an input port and Port B as an output port.
- Assuming that an A-to-d converter is connected with port A as an interrupt I/O and a printer is connected with port B as a status check I/O