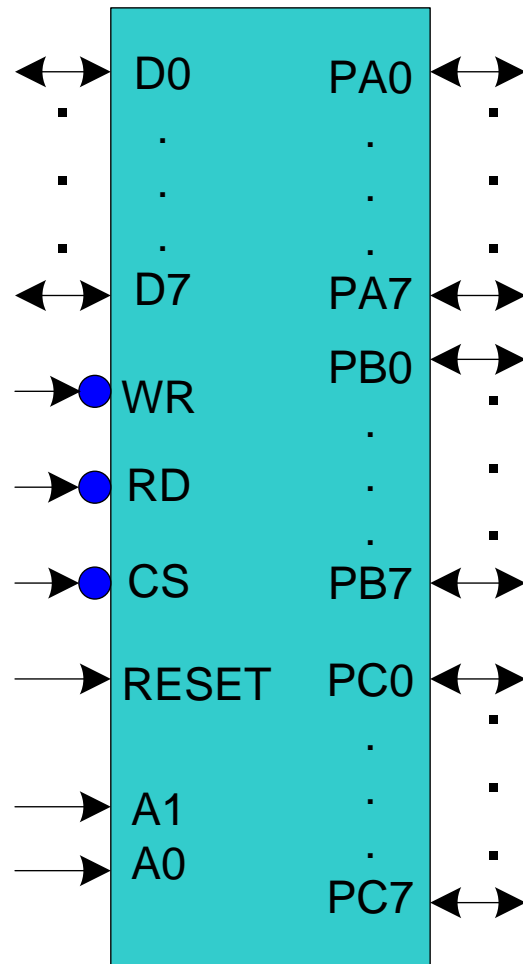# Intel 8255 Programmable Peripheral Interface

## *Pins, Modes and Interfacing with 8088 CPU*

# 8255 PPI Pinout



8255 PPI

# Important pins of PPI

- $\overline{\text{RD}}$
- $\overline{\text{WR}}$
- A1, A0
- RESET
- $\overline{\text{CS}}$
- Data bus (D7…D0)
- PortA (PA7…PA0)
- PortB (PB7…PB0)
- PortC (PC7…PC0)

# PPI Address Inputs

| A1 | A0 | Function |
|----|----|----------|
| 0 | 0 | PortA Selected |
| 0 | 1 | PortB Selected |
| 1 | 0 | PortC Selected |
| 1 | 1 | Control Word Selected |

# Groups of PPI Lines

- Group A consists of eight pins of PortA  and upper four pins of PortC (PC4 to PC7)

- Group B consists of eight pins of PortB  and lower four pins of PortC (PC0 to PC3)

- Direction is selected through programming  an 8-bit 'control word' register

# Control Word Register

Group A lines

Group B lines

| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|
| 1 | | | | | | | |

Modes

PortA I/O

PortC
(PC7...PC4) I/O

PortC
(PC3...PC0) I/O

PortB I/O

Modes
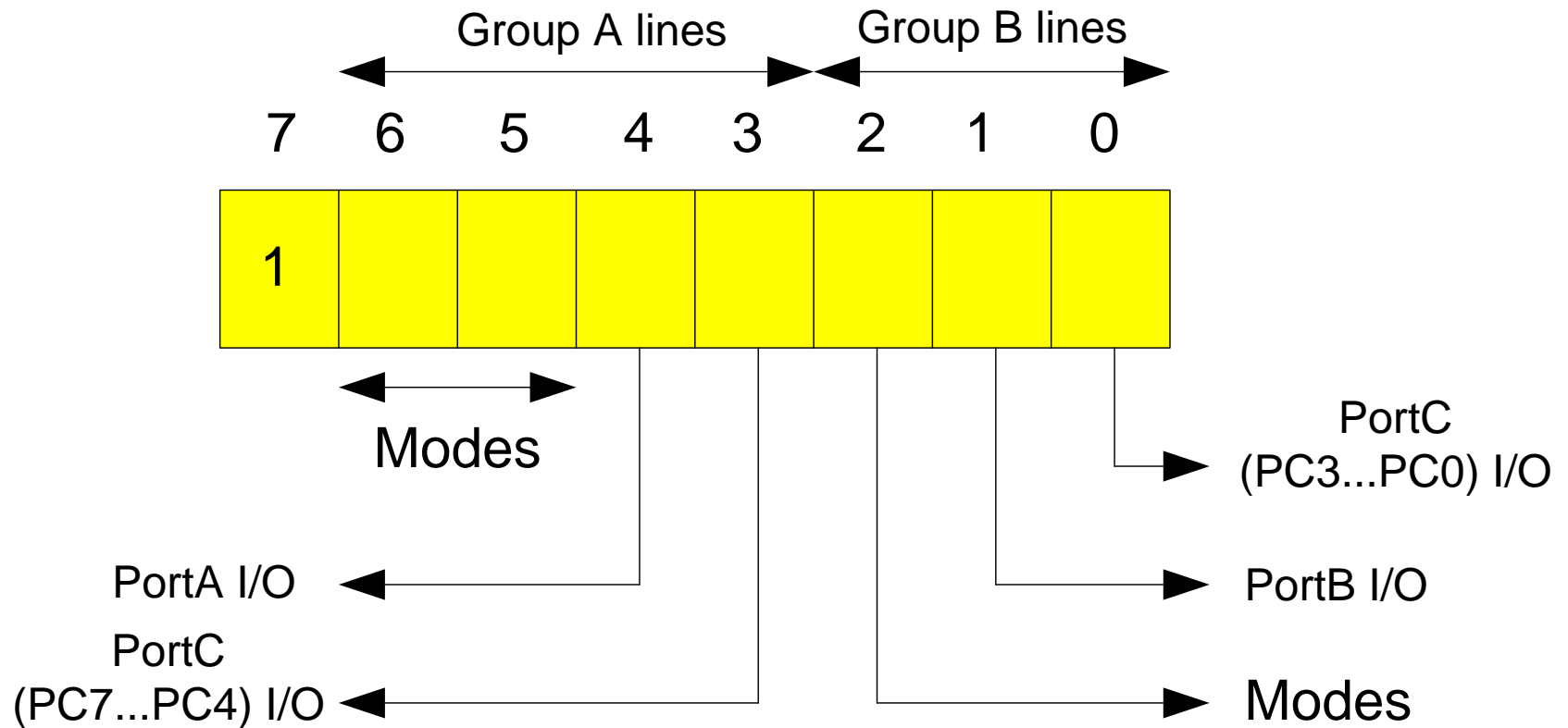
# Mode 0: Basic I/O mode

- Mode 0, called the basic I/O mode, configures I/O lines as 'buffered inputs' or 'latched outputs'
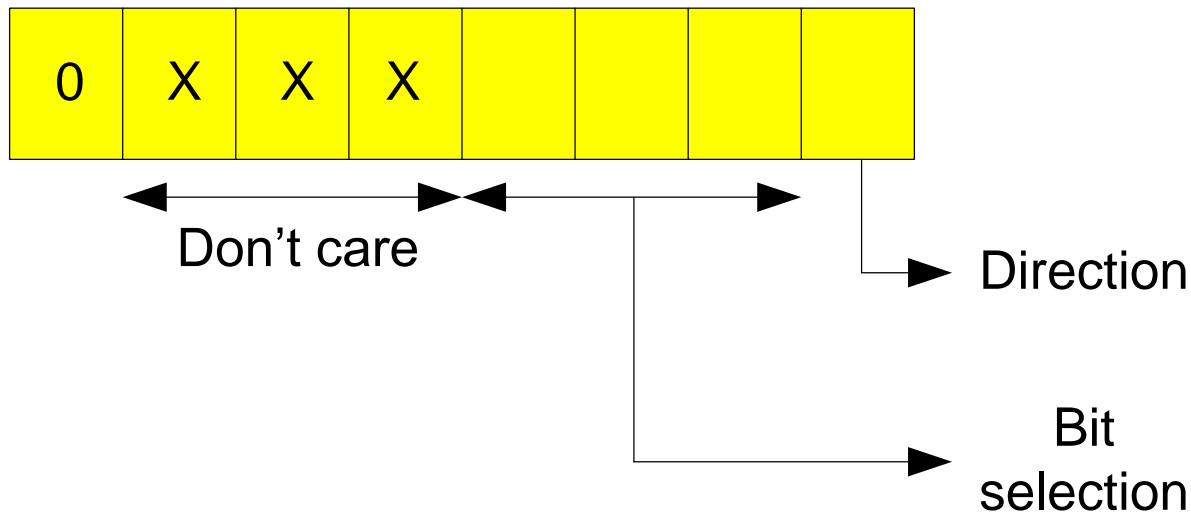
# Group I/O mode

- Deals with Group A and Group B I/O
- Activated with placing logic 1 in bit7 of control word register
- All the lines of Port A can be configured either input or output
- For group A, all the four lines of Port C (PC7…PC4) can be configured either input or output
- All the lines of Port B can be configured either input or output
- For group B, all the four lines of Port C (PC3…PC0) can be configured either input or output

# Simple Tasks for PPI Programming

- Configure all lines of Group A as 'input' and all lines of Group B as 'output'.

- Configure PortA as 'input', PortB as 'output' and PortC as 'output'

- In Group A, configure PortA as 'output', and PortC as 'input'

- In Group B, configure PortB as 'input', and PortC as 'output'

# Bit-select mode

- Activated by placing logic 0 in bit7 of control word register

- Selects direction of individual bit of PortC

| 0 | X | X | X | | | | |
|---|---|---|---|---|---|---|---|

Don't care

Direction

Bit selection

# Interfacing with 8088 CPU



8255 PPI