

* Simple I/O:

- No delay. Data transfer ~~send~~ immediately
- We just need to turn on the device on switch.

* Strobe:

- ~~Delay~~ Delay for data transfer.
- Used for slow response device.
- Need an external signal for data read out.
- When data is ready to read, device send signal to read. This signal known as strobe.

⇒ Polling:
microprocessor check for strobe signal
maintaining a fixed interval.

Interrupt:
Until the device provide the interrupt signal,
microprocessor will not check for strobe.

* Hand-shaking I/O:

Limited range of data first transfer to
Peripheral Interface device. When the device is
full, it will send microprocessor to read data.
And warn the I/O device not to send new
data.

ZBF = Input Buffer Full

- given to the I/O device to warn that buffer is full, don't send new data.

INT = Interrupt

- given to microprocessor to read data.

STB =

IBF = INT = ~~same~~ generate at the same time.

OBF = Output Buffer Full

Ack = acknowledgement that ~~data is read done~~ output done.

8255A / PPI

Programmable Peripheral Interface

* Total 4 Port \Rightarrow 3 for peripheral, PA, PB, PC
1 for data, D₀ - D₇

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A₂ A₁ \Rightarrow Control Pin.

* BSR = Bit Set Reset ($D_7=0$)

\Rightarrow Port C used for set and reset.

We use it for strobe signal.

$D_3 - D_1 \Rightarrow$ Decide the bit number

000 = PC₀

001 = PC₁

...

$D_7 - D_0 \Rightarrow 0 \Rightarrow$ Reset

1 \Rightarrow set

Mode - 0 \Rightarrow simple I/O

Mode - 1 \Rightarrow Strobe

Mode - 2 \Rightarrow Handshake

* Step

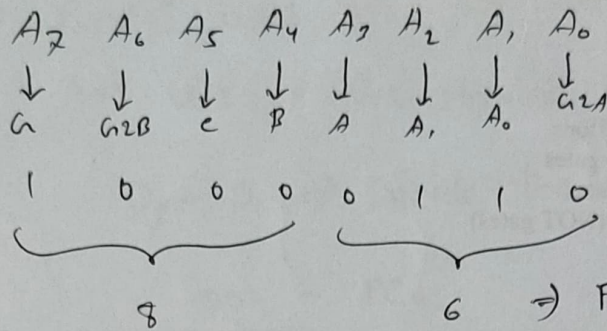
1. Look at the circuit carefully.

- ~~find out~~ Detect the I/O transfer mode
 - simple
 - strobe
 - handshake

- Determine the data for control Register

D_7	D_6	D_5	D_4	D_3	D_2	D_1	D_0
1	0	0	0	x	x	x	x
				1	0	1	1
8				B			

2. Set the require address for Port and selection



⇒ For control Register

CR ⇒ 8B H

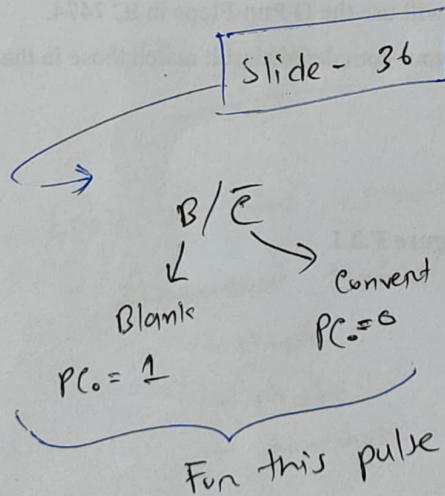
PA ⇒ 80 H

PB ⇒ 82 H

PC ⇒ 84 H

Can be changed, depends on pin connection of micropro... address pin.

3. Write Required Code



$D_7 - D_0$

0xxx 0001 ⇒ 01H = PC_0 set
00H = PC_0 Reset

For I/O Mode

$D_7 - D_0$
1011 11x0 = BC H
B
↓
C

$PC_2 = \text{strobe signal}$

0 = Data Ready

1 = Not Ready

From PC

$P_2 \dots P_0$

1 000... 0

AND = ~~0~~ $P_2 = 0$
AND = 0

$P_2 = 1$

AND = 1... 0

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⊗ Question Pattern!

Microprocessor address will be changed

- So look carefully at the circuit.

Port connection may be changed.

So generate the address and control value carefully.

Then implement the code.