



Vidyavardhini's College of Engineering & Technology

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Title:	Program for interfacing 8086 with 8255 PPI.
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Aim: 8255 is configured in mode 0 is simple Input / Output Mode. Ports A,B,C are in mode 0. All the ports are in output mode and data is transmitted to the respective ports.

Apparatus : Microprocessor 8086 and 8255 PPI experimental setup kit

Theory:

The programmable Peripheral Interface chip 8255 has three 8-bit Input / Output ports i.e. Port A, Port B, Port C upper (PCU) and Port C lower (PCL). Direct bit set/reset capability is available for port C. 8255 is a very powerful tool for interfacing peripheral equipment to the microprocessor. It is flexible enough to interface with any I/o device without the need of external logic.

Procedure :

1. Connect 8086 kit to 8255 PPI kit using 50 pin FRU cable.
2. Default I/O address ranges are :

SELECTION	ADDRESS
Port A	30 H
Port B	31 H
Port C	32 H
Command Port	33 H

3. 80 H is the control word for 8255. It is set in simple I/O mode and all the ports are in output mode 0

D7	D6	D5	D4	D3	D2	D1	D0
1	0	0	0	0	0	0	0

Always 1 for I/O	Group A mode 0	Port A (output)	Port C1 (output)	Group B (output)	Port B (output)	Port C2 (output)
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4. The LED's connected to the pins at Port A glow according to the data transmitted on port A.
5. The LED's connected to the pins of port B glow according to the data transmitted on Port B.
6. The LED's connected to the pins of port C glow according to the data transmitted on Port C.



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Program :

Segment : C000

Offset : C000

Memory	Opcode	Instructions	Comments
C000	B0	MOV AL,80H	Mode 0, All ports in output mode
C001	80		
C002	E6	OUT CWR, AL	
C003	33		
C004	B0	MOV AL, 55H	Data for Port A
C005	55		
C006	E6	OUT PORT A,AL	
C007	30		
C008	B0	MOV AL,AAH	Data for port B
C009	AA		
C00A	E6	OUT PORT B,AL	
C00B	31		
C00C	B0	MOV AL,0FH	Data for port C
C00D	0F		
C00E	E6	OUT PORTC,AL	
C00F	32		
C010	CC	INT 3	Stop



Code :

org 100h

.data

arr db 05h, 10h, 03h, 09h, 02h

.code

lea si, arr

mov cx, 05h

mov al, 00h

l1:

cmp al, [si]

jnc l2

mov al, [si]

l2:

inc si

loop l1

Output :

The screenshot displays an 8086 emulator interface with the following components:

- Source Code Editor (Top Left):** Shows assembly code for a loop. Line 13, `inc si`, is highlighted in yellow.
- Original Source Code (Bottom Left):** A smaller window showing the same code, with line 19, `loop l1`, highlighted in yellow.
- Emulator Window (exp9.com):**
 - Registers:** A table showing the state of various registers.

	H	L
AX	00	10
BX	00	00
CX	00	00
DX	00	00
CS	0700	
IP	012C	
SS	0700	
SP	FFFE	
BP	0000	
SI	0107	
DI	0000	
DS	0700	
ES	0700	
 - Memory Dump:** Two panels showing memory contents. The left panel shows addresses 07111 to 07126 with values like 73 115 s, 02 002 0, etc. The right panel shows instructions like `JNB 0115h`, `MOV AL, [SI]`, `INC SI`, and `LOOP 020Fh`.
 - Execution Controls:** Buttons for Load, reload, step back, single step, and run. A step delay slider is set to 0 ms.

Conclusion :

In conclusion, the program for interfacing the 8086 microprocessor with the 8255 Programmable Peripheral Interface (PPI) serves as a crucial bridge between the computational power of the processor and the external world of peripherals. By effectively managing input and output operations through the 8255 PPI, this program enables seamless communication and control of various devices connected to the microprocessor.