



Vidyavardhini's College of Engineering & Technology

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Class/Sem:	SE/IV
Experiment No.:	9
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. On the left, a text editor shows the assembly code for a program. The code includes a data segment with an array 'arr' and a loop that increments the SI register until it reaches 12. The main window shows the emulator's state, including registers, memory, and instructions.

```
01 org 100h
02
03 .data
04 arr db 05h, 10h, 03h, 09h, 02h
05
06 .code
07 lea si, arr
08 mov cx, 05h
09 mov al, 00h
10
11 l1:
12 cmp al, [si]
13 jnc 12
14 mov al, [si]
15
16 l2:
17 inc si
18
19 loop l1
```

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 (0700:0111):

Address	Value	Comment
07111	73 115	s
07112	02 002	0
07113	8A 138	e
07114	04 004	4
07115	46 070	F
07116	E2 226	r
07117	F7 247	z
07118	90 144	e
07119	90 144	e
0711A	90 144	e
0711B	90 144	e
0711C	90 144	e
0711D	90 144	e
0711E	90 144	e
0711F	90 144	e
07120	90 144	e
07121	90 144	e
07122	90 144	e
07123	90 144	e
07124	90 144	e
07125	90 144	e
07126	90 144	e

Instructions:

Address	Instruction
07111	JNB 0115h
07112	MOV AL, [SI]
07113	INC SI
07114	LOOP 020Fh
07115	NOP
07116	NOP
07117	NOP
07118	NOP
07119	NOP
0711A	NOP
0711B	NOP
0711C	NOP
0711D	NOP
0711E	NOP
0711F	NOP
07120	NOP
07121	NOP
07122	NOP
07123	NOP
07124	NOP
07125	NOP
07126	NOP

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.