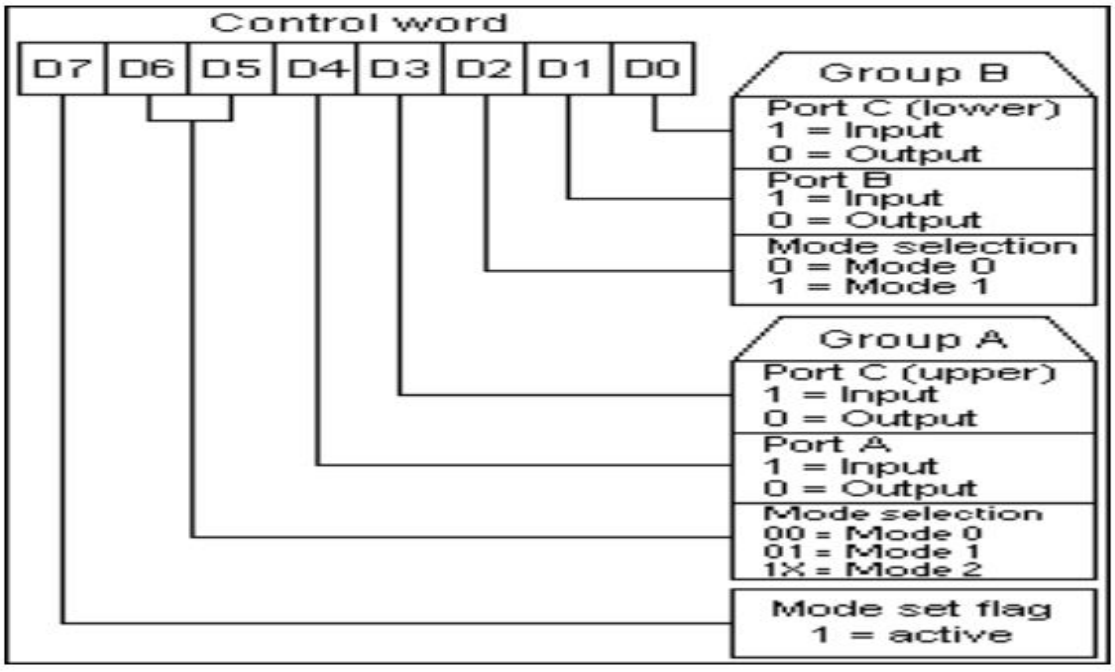
MILITARY INSTITUTE OF SCIENCE AND TECHNOLOGY
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
COURSE TITLE: MICROPROCESSOR AND MICROCONTROLLER SESSIONAL
COURSE CODE: CSE 306
LAB MANUAL 2

8255A Programmable Peripheral Interface

The Intel 8255A is a general purpose programmable I/O device designed for use with Intel microprocessors. It has 24 I/O pins which may be individually programmed in 2 groups of 12 used in 3 major modes of operation.
Control Group A- Port A and Port C upper (C7-C4)
Control Group B- Port B and Port C upper (C3-C0)

The Control Word Register can **Only** written into. No read operation of the Control Word Register is allowed.

Control Word Format



Mode 0- Basic I/O
Mode 1-Storbbed I/O
Mode 2- Bidirectional (Only port A)

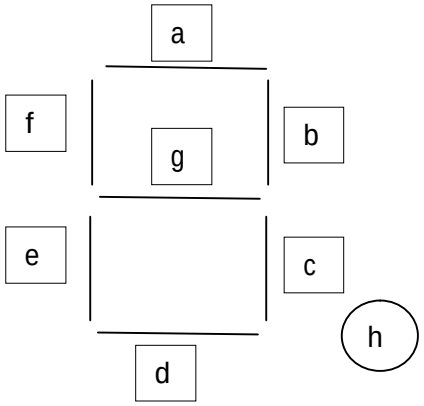
Table: MDA-8086 I/O Address Map

Address	I/O Port Functions	Device
18H 1AH 1CH 1EH	Port A Data Register Port B Data Register Port C Data Register Control Register	8255A-CS1(DOT & ADC interface)
19H 1BH 1DH 1FH	Port A Data Register Port B Data Register Port C Data Register Control Register	8255A-CS2(LED & Stepping Motor)

Default values:

CS: 0000H
DS: 0000H
IP: 1000H

Seven Segment Display:



0 for Active and 1 for Inactive. To display something on 7 segment port A is used for output (19H)

Digits	Hexa	h	g	f	e	d	c	b	a
0	0C0H	1	1	0	0	0	0	0	0
1	0F9H	1	1	1	1	1	0	0	1
2	0A4H	1	0	1	0	0	1	0	0
3	0B0H	1	0	1	1	0	0	0	0
4	099H	1	0	0	1	1	0	0	1
5	092H	1	0	0	1	0	0	1	0
6	082H	1	0	0	0	0	0	1	0
7	0F8H	1	1	1	1	1	0	0	0
8	080H	1	0	0	0	0	0	0	0
9	090H	1	0	0	1	0	0	0	0

Experiments:

1. Display 9,8,7 in seven segment display
2. Display 0-9 in seven segment display repeatedly

LEDs:

Port B (1BH) is used for LED.

LED	RYGR	R	Y	G	R
Red	01H	0	0	0	1
Green	02H	0	0	1	0
Yellow	04H	0	1	0	0
Red	08H	1	0	0	0

Experiments:

1. Turn the RED LED on
2. Blink the RED LED
3. Turn on all four LEDs one after another repeatedly.