



Computer Engineering Department	
Course Name: Microprocessor Lab	Number: 10636392
Lab Report Grading Sheet	

Instructor: Dr. Manar Qamhieh.	Experiment #: 1
Academic Year: 2023/2024	Experiment Name: Binary Input/Outputs
Semester: 1 (A)	

Students				
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Performed on: 20/2/2024		Submitted on: 27/2/2024		
Report’s Outcomes				
ILO __ =() %	ILO __ =() %	ILO __ =() %	ILO __ =() %	ILO __ =() %
Evaluation Criterion			Grade	Points
Abstract answers to the questions: “What did you do? How did you do it? What did you find?”			0.5	
Introduction and Theory Sufficient, clear, and complete statement of objectives. In addition to Presents sufficiently the theoretical basis.			1.5	
Apparatus/ Procedure Apparatus sufficiently described to enable another experimenter to identify the equipment needed to conduct the experiment. Procedure sufficiently described.			2	
Experimental Results and Discussion (In-Lab Worksheet) Crisp explanation of experimental results. Comparison of theoretical predictions to experimental results, including discussion of accuracy and error analysis in some cases.			4	
Conclusions and Recommendations Conclusions summarize the major findings from the experimental results with adequate specificity. Recommendations appropriate considering conclusions. Correct grammar.			1	
Appearance Title page is complete, page numbers applied, content is well organized, correct spelling, fonts are consistent, good visual appeal.			1	
Total			10	



➤ Abstract & Introduction :

In this experiment we want to implement basic functionalities of binary Input/Output (I/O) and write an assembly code to read the state of the MML8086K3 trainer board's switches (K1 - K8) and show the status on the output LEDs (L1 - L8) using 8255A adapter.

Tools:

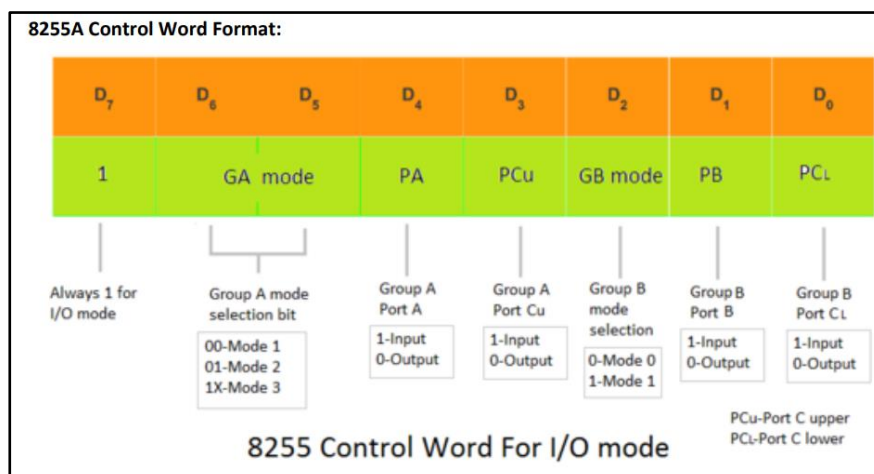
- MML8086K3: 8255 PPI.
- MML8086K3 Software: dice8088.

➤ Procedure:

1. At first, we connected **Switches** on 8255 with port A (input), and the **LEDs** are connected on 8255 with port B (output).
2. We write the code on dice8088 (we save it as file.asm), we will explain it.
3. We set the voltage button on the kit to 5v, then we open "com 3", and load, compile after the data loaded on the kit.

Port Address	
Register	Address
Control word register	0FF2BH
PORT A	0FF28H
PORT B	0FF29H
PORT C	0FF2AH

4. To determine which port is used as input and which is used as output:





5. As we want to use the I/O mode, so we set:

D7 => 1, D6 & D5 => 00 (Mode 1), D4 => 1 (input), D3 => 0 (we will not use port C), D2 => 0 (Mode 0), D1 => 0 (output), D0 => 0 (we will not use port C).

So, the data sent to the control register will be (10010000) 90H.

6. The assembly code:

```
CODE SEGMENT
ASSUME CS:CODE
ORG 100H

START:
mov al , 90H      ;Making port A input and port B output.
mov dx , 0FF2Bh   ;Moving the data to register with port number 0FF2Bh.
out dx , al       ;Put 90h on port number 0FF2Bh (Control word register).

lp:               ;Infinite loop to be sure when changing the input at any time, the output appears.
mov dx , 0FF28H   ;The address of port A.
in ax , dx        ;Taking the value from the switches (port A).
mov dx , 0FF29H   ;The address of port B.
out dx , ax       ;Sending the value in ax to I/o port address in dx (Leds).
jmp lp            ;reading input again and again.

END START
CODE ENDS
```

➤ Conclusion:

We learn how to transact with MML8086K3 kit and use the DiCE8088 software to program it and write the assembly code on it, also we learned how to get familiar with using 8255A PPI, configure it and the basic input/ output on the kit.

➤ References:

- Microprocessor material.
- Explanation of Dr. Manar Qamhie.