3 to 8 Decoder through Arduino UNO

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CONTENTS

***Abstract*—This document shows how to use Arduino UNO as a 3 to 8 Decoder**

I. COMPONENTS

Component	Value	Qunatity
Resistor	220Ohm	8
LED	Red	8
Arduino	UNO	1
Jumper Wires	M-M	20
BreadBoard		1

TABLE I

II. HARDWARE

Problem 2.1. Make connections between the Arduino UNO and LED's as shown in Table 2

Problem 2.2. Connect anodes of LED's to the pins using resistors and cathodes to ground(gnd).

d2	d3	d4	d5	d6	d7	d8	d9
led1	led2	led3	led4	led5	led6	led7	led8

TABLE II

III. SOFTWARE

Problem 3.1 Now execute the following program and verify all the outputs as mentioned in Truth table (Table 3.1) by modifying the inputs X, Y, Z.

wget https://github.com/mygit-sampath-govardhan/fwc-iith-assignments/blob/0e4dd206065b3e89aee313dc7fe418264b8c725d/Assignment1-code.cpp

X	Y	Z	A	B	C	D	E	F	G	H
0	0	0	1	0	0	0	0	0	0	0
0	0	1	0	1	0	0	0	0	0	0
0	1	0	0	0	1	0	0	0	0	0
0	1	1	0	0	0	1	0	0	0	0
1	0	0	0	0	0	0	1	0	0	0
1	0	1	0	0	0	0	0	1	0	0
1	1	0	0	0	0	0	0	0	1	0
1	1	1	0	0	0	0	0	0	0	1

TABLE III
TRUTH TABLE

Note: Output pins d2-d9 are referenced as A-H respectively.

Solution : In the Truth table (Table3) X,Y,Z are inputs and A,B,C,D,E,F,G,H are outputs. This table represents the system that behaves as a 3 to 8 decoder. Using Boolean logic,

A= X' Y' Z'

B= X' Y' Z

C= X' Y Z'

D= X' Y Z

E= X Y' Z'

F= X Y' Z

G= X Y Z'

H= X Y Z

IV. CONCLUSION

Here 3 to 8 decoder has been successfully verified.