7447 through AVR-Assembly

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Contents

***Abstract*—This manual shows how to program the 7447 BCD-Seven segment display decoder through AVR-Assembly.**

1 Components

Component	Value	Quantity
Resistor	220 Ohm	1
Arduino	UNO	1
Seven Segment Display		1
Decoder	7447	1
Jumper Wires	M-M	20
Breadboard		1

2 Controlling the Display

1. Connect the 7447 IC to the seven segment display.
2. Make connections between the 7447 and the arduino according to Table 2

7447	D	C	B	A
Arduino	5	4	3	2

TABLE 2

3. Execute the following program. The number 5 will be displayed.

```
wget https://raw.githubusercontent.com/gadepall
    /arduino/master/assembly/7447/io/codes/
    decoder.asm
```

4. Now generate the numbers 0-9 by modifying the above program.
5. Execute the following program after making the connections in Table 5. The number 3 will be displayed. What does the program do?

```
wget https://raw.githubusercontent.com/gadepall
    /arduino/master/assembly/7447/io/codes/
    ip_7447.asm
```

	Z	Y	X	W
Input	0	0	1	1
Arduino	13	12	11	10

TABLE 5

Solution: The program reads from pins 10-13 and displays the equivalent decimal value on the display by writing to pins 2-5 of the arduino.

6. Explain the following instructions

```
ldi r17, 0b11000011 ; identifying input
    pins 10,11,12,13
ldi r17, 0b11111111 ;
out PORTB,r17  ;
in r17,PINB
```

Solution: First define pins 10,11,12 and 13 as input pins. Then ensure that these pins have the input 1 by default. Load the inputs from the pins in port B (which includes pins 10-13) into R17.

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