

Seven Segment Display through AVR-Assembly

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<i>Abstract</i> —The objective of this manual is to show how to control a seven segment display through the AVR-Assembly.		

1 COMPONENTS

Component	Value	Quantity
Breadboard		1
Resistor	$\geq 220\Omega$	1
Arduino	Uno	1
Seven Segment Display	Common Anode	1
Jumper Wires		20

TABLE 0

2 CONTROLLING THE DISPLAY

- Complete Table 1 for all the digital pins using Fig. 1.

Port Pin	Digital Pin
PD2	2
PB5	13

TABLE 1

- Make connections according to Table 2.
- Execute the following code. The number 2 should be displayed.

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Atmega168 Pin Mapping

Arduino function	Atmega168 Pin	Atmega168 Pin	Arduino function
reset	(PCINT14/RESET) PC6	28	PC5 (ADC5/SCL/PCINT13) analog input 5
digital pin 0 (RX)	(PCINT16/RXD) PD0	27	PC4 (ADC4/SDA/PCINT12) analog input 4
digital pin 1 (TX)	(PCINT17/TXD) PD1	26	PC3 (ADC3/PCINT11) analog input 3
digital pin 2	(PCINT18/INT0) PD2	25	PC2 (ADC2/PCINT10) analog input 2
digital pin 3 (PWM)	(PCINT19/OC2B/INT1) PD3	24	PC1 (ADC1/PCINT9) analog input 1
digital pin 4	(PCINT20/XCK/T0) PD4	23	PC0 (ADC0/PCINT8) analog input 0
VCC	VCC	22	GND
GND	GND	21	AREF
crystal	(PCINT6/XTAL1/TOSC1) PB6	20	AVCC
crystal	(PCINT7/XTAL2/TOSC2) PB7	19	PB5 (SCK/PCINT5) digital pin 13
digital pin 5 (PWM)	(PCINT21/OC0B/T1) PD5	18	PB4 (MISO/PCINT4) digital pin 12
digital pin 6 (PWM)	(PCINT22/OC0A/AIN0) PD6	17	PB3 (MOSI/OC2A/PCINT3) digital pin 11 (PWM)
digital pin 7	(PCINT23/AIN1) PD7	16	PB2 (SS/OC1B/PCINT2) digital pin 10 (PWM)
digital pin 8	(PCINT0/CLKO/ICP1) PB0	15	PB1 (OC1A/PCINT1) digital pin 9 (PWM)

Digital Pins 11, 12 & 13 are used by the ICSP header for MOSI, MISO, SCK connections (Atmega168 pins 17, 18 & 19). Avoid low-impedance loads on these pins when using the ICSP header.

Fig. 1

Arduino	2	3	4	5	6	7	8
Display	a	b	c	d	e	f	g
2	0	0	1	0	0	1	0

TABLE 2

wget <https://raw.githubusercontent.com/gadepall/arduino/master/assembly/sevensseg/codes/sevensseg.asm>

- Now generate the numbers 0-9 by modifying the above program.