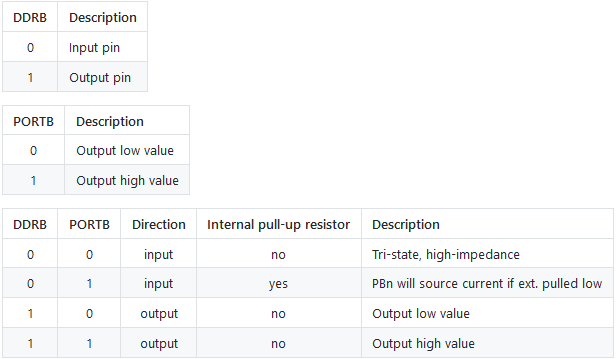
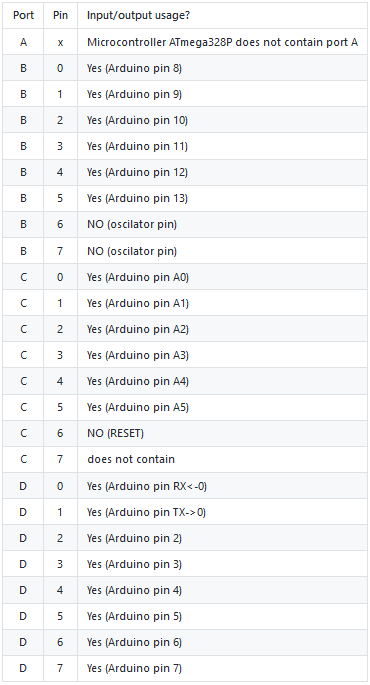
**1.**





/\* Defines -----------------------------------------------------------\*/

#define LED\_GREEN PB5 // AVR pin where green LED is connected

#define LED\_RED PC0 // AVR pin where red LED is connected

#define PUSH\_BUTTON PD0 // AVR pin where pushbutton is connected

#define BLINK\_DELAY 500

#ifndef *F\_CPU*

#define *F\_CPU* 16000000 // CPU frequency in Hz required for delay

#endif

/\* Includes ----------------------------------------------------------\*/

#include <util/delay.h> // Functions for busy-wait delay loops

#include <avr/io.h> // AVR device-specific IO definitions

/\* Functions ---------------------------------------------------------\*/

/\*\*

\* Main function where the program execution begins. Toggle two LEDs

\* when a push button is pressed.

\*/

int main(void)

{

/\* GREEN LED \*/

DDRB |= (1<<LED\_GREEN); // Set pin as output in Data Direction Register...

PORTB &= ~(1<<LED\_GREEN); // ...and turn LED off in Data Register

/\* RED LED \*/

DDRC |= (1<<LED\_RED); // Set pin as output in Data Direction Register...

PORTC &= ~(1<<LED\_RED); // ...and turn LED off in Data Register

/\* PUSHBUTTON \*/

DDRD &= ~(1<<PUSH\_BUTTON); // Set pin as input in Data Direction Register...

PORTD |= (1<<PUSH\_BUTTON); // Set pull-up resistor

// Infinite loop

while (1)

{

if(bit\_is\_clear(PIND, PUSH\_BUTTON)) //if button is pressed blink with LEDs

{

// Pause several milliseconds

*\_delay\_ms*(BLINK\_DELAY);

PORTB ^= (1<<LED\_GREEN);

PORTC ^= (1<<LED\_RED);

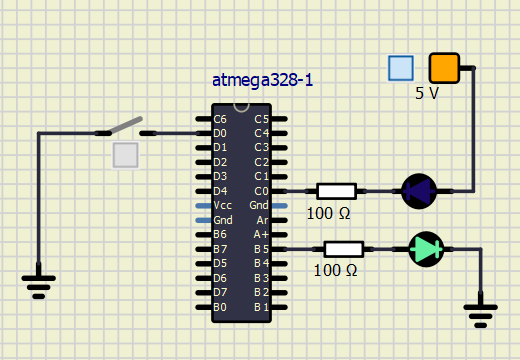
}

}

// Will never reach this

return 0;

}



**2.**

/\* Defines -----------------------------------------------------------\*/

#define BLINK\_DELAY 250 //speed of blinking

#ifndef *F\_CPU*

#define *F\_CPU* 16000000 // CPU frequency in Hz required for delay

#endif

/\* Includes ----------------------------------------------------------\*/

#include <util/delay.h> // Functions for busy-wait delay loops

#include <avr/io.h> // AVR device-specific IO definitions

int main(void)

{

//LEDs are on pins PC5 to PC0 (6 total) alternative DDRC |= (1<<PC5)|(1<<PC4)|(1<<PC3)...

DDRC |= (0b00111111); //set all LEDs as output

PORTC &= (0b11000000); //set off all LEDs

*uint8\_t* u = 0b00010000;

// Infinite loop

while (1)

{

//rewriting PC7 (not used) and PC6 (defined as input with ext. pull up) does not matter

//shift lighting LED to left

for(*uint8\_t* i = 0; i<6; i++)

{

PORTC = (1<<i);

*\_delay\_ms*(BLINK\_DELAY);

}

//shift lighting LED to right

for(*int8\_t* i = 0; i<4; i++)

{

PORTC = (u>>i);

*\_delay\_ms*(BLINK\_DELAY);

}

}

// Will never reach this

return 0;

}