

```
//YWH EDITS
//
// hello.array.44.c
//
// Charlieplex LED array hello-world
//
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//
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//

#include <avr/io.h>
#include <util/delay.h>
#include <avr/pgmspace.h>
#include <string.h>

#define output(directions,pin) (directions |= pin) // set port direction for output
#define input(directions,pin) (directions &= (~pin)) // set port direction for input
#define set(port,pin) (port |= pin) // set port pin
#define clear(port,pin) (port &= (~pin)) // clear port pin
#define pin_test(pins,pin) (pins & pin) // test for port pin
#define bit_test(byte,bit) (byte & (1 << bit)) // test for bit set
#define bit_delay_time 100 // bit delay for 9600 with overhead
#define bit_delay() _delay_us(bit_delay_time) // RS232 bit delay
#define half_bit_delay() _delay_us(bit_delay_time/2) // RS232 half bit delay
#define led_delay() _delay_ms(100) // LED flash delay, FOR LED ARRAY MS1!!!

#define PWM_delay() _delay_us(10) // PWM delay

#define led_port PORTA
#define led_direction DDRA
//
#define pin_port PORTA
#define pin_direction DDRA
#define pin_in (1 << PA6)
//

#define A (1 << PA1) // row 1
#define B (1 << PA2) // row 2
#define C (1 << PA3) // row 3
#define D (1 << PA4) // row 4
#define E (1 << PA5) // row 5

void get_char(volatile unsigned char *pins, unsigned char pin, char *rxbyte) {
    //
    // read character into rxbyte on pins pin
    // assumes line driver (inverts bits)
    //
    *rxbyte = 0;
    while (pin_test(*pins,pin))
        //
        // wait for start bit
        //
        ;
}
```