

```
/** COMPILER DIRECTIVES **/
```

```
#include <mega328p.h>
```

```
#include <delay.h>
```

```
/** USER DEFINED HEADER FILES **/
```

```
#include "serial.c"
```

```
#include "adc.c"
```

```
#define M1 PORTB.1
```

```
#define M2 PORTB.2
```

```
#define M3 PORTB.3
```

```
#define M4 PORTD.5
```

```
#define M5 PORTD.6
```

```
/** FUNCTIONS DECLARATION **/
```

```
void sys_Init(void);
```

```
/** MAIN FUNCTION **/
```

```
void main(void)
```

```
{
```

```
    int res,i;
```

```
    float res1=0;
```

```
    DDRB.1= 1; DDRB.2=1; DDRB.3=1; //Program PORTD5(OC1A) as output
```

```
    DDRD.5=1; DDRD.6=1;
```

```
    sys_Init();
```

```

while (1)
{

    res = read_adc(5);
    res1 = (res * 5.00) / 1023.0;

    USART_float(res1);
    USART_Transmit(" ");

    if(res1<2.9)
    {
        for(i=0;i<10;i++)
            {
                M1 = 1;

                delay_ms(2);    // 2ms

                M1=0;

                delay_ms(18); //18ms
            }
    }
    else if((res1>2.9)&(res1<3.0))
    {
        for(i=0;i<10;i++)
            {

                M1 = 1;

                delay_ms(1);    //1ms
            }
    }
}

```

```

        delay_us(500); //0.5ms

        M1=0;

        delay_ms(18); //19ms

    delay_us(500); //0.5ms
}

}

else if(res1>3.0)
{
    for(i=0;i<10;i++)
    {
        M1 = 1;

        delay_ms(1); //1ms

        M1=0;

        delay_ms(19); //19ms

    }
}

res = read_adc(4);
res1 = (res * 5.00) / 1023.0;

USART_float(res1);
USART_Transmit(" ");

if(res1<2.5)
{
    for(i=0;i<10;i++)
    {

```

```

        M2 = 1;

                                delay_ms(2);    // 2ms

                                M2=0;

                                delay_ms(18); //18ms

    }

}

else if((res1>2.5)&(res1<3.1))
{
    for(i=0;i<10;i++)
        {

            M2 = 1;

            delay_ms(1);    //1ms

            delay_us(500);

            M2=0;

            delay_ms(18); //19ms

            delay_us(500);

        }

}

else if(res1>3.1)
{
    for(i=0;i<10;i++)
        {

            M2 = 1;

            delay_ms(1);    //1ms

            M2=0;

```

```

        delay_ms(19); //19ms
    }
}

res = read_adc(3);
res1 = (res * 5.00) / 1023.0;

USART_float(res1);
USART_Transmit(" ");

if(res1>3.0)
{
    for(i=0;i<10;i++)
    {
        M3 = 1;

        delay_ms(2); // 2ms

        M3=0;

        delay_ms(18); //18ms
    }
}

else if((res1>2.4)&(res1<3.0))
{
    for(i=0;i<10;i++)
    {

        M3 = 1;

        delay_ms(1); //1ms
    }
}

```

```

        delay_us(500);

        M3=0;

        delay_ms(18); //19ms

    delay_us(500);
}

}

else if(res1<2.4)
{
    for(i=0;i<10;i++)
        {
            M3 = 1;

            delay_ms(1); //1ms

            M3=0;

            delay_ms(19); //19ms

        }
}

res = read_adc(2);

res1 = (res * 5.00) / 1023.0;

USART_float(res1);

USART_Transmit(" ");

if(res1<2.3)
{
    for(i=0;i<10;i++)

```

```

        {
            M4 = 1;

            delay_ms(2);    // 2ms

            M4=0;

            delay_ms(18); //18ms

        }
    }
    else if((res1>2.3)&(res1<2.9))
    {
        for(i=0;i<10;i++)
        {
            M4 = 1;

            delay_ms(1);    //1ms

            delay_us(500);

            M4=0;

            delay_ms(18); //19ms

            delay_us(500);
        }

    }
    else if(res1>2.9)
    {
        for(i=0;i<10;i++)
        {
            M4 = 1;

            delay_ms(1);    //1ms

```

```

        M4=0;

        delay_ms(19); //19ms

    }
}

res = read_adc(1);
res1 = (res * 5.00) / 1023.0;

USART_float(res1);
USART_Transmit("\r\n");

if(res1>3.2)
{
    for(i=0;i<10;i++)
        {
            M5 = 1;

            delay_ms(2); // 2ms

            M5=0;

            delay_ms(18); //18ms

        }
}
else if((res1>2.7)&(res1<3.2))
{
    for(i=0;i<10;i++)
        {

            M5 = 1;

```



```

        delay_ms(1); //1ms
        delay_us(500);
        M5=0;
        delay_ms(18); //19ms
    }
    delay_us(500);
}

else if(res1<2.7)
{
    for(i=0;i<10;i++)
    {
        M5 = 1;
        delay_ms(1); //1ms
        M5=0;
        delay_ms(19); //19ms
    }
}
}
}
}

```

```

void sys_Init()

```

```

{

```

```

    DDRC = 0x00;

```

```

    // Crystal Oscillator division factor: 1

```

```
#pragma optsize-
```

```
CLKPR=0x80;
```

```
CLKPR=0x00;
```

```
#ifdef _OPTIMIZE_SIZE_
```

```
#pragma optsize+
```

```
#endif
```

```
// USART initialization
```

```
// Communication Parameters: 8 Data, 1 Stop, No Parity
```

```
// USART Receiver: Off
```

```
// USART Transmitter: On
```

```
// USART0 Mode: Asynchronous
```

```
// USART Baud Rate: 9600
```

```
UCSR0A=0x00;
```

```
UCSR0B=0x48;
```

```
UCSR0C=0x06;
```

```
UBRR0H=0x00;
```

```
UBRR0L=0x67;
```

```
// ADC initialization
```

```
// ADC Clock frequency: 1000.000 kHz
```

```
// ADC Voltage Reference: AREF pin
```

```
// ADC Auto Trigger Source: None
```

```
// Digital input buffers on ADC0: On, ADC1: On, ADC2: On, ADC3: On
```

```
// ADC4: On, ADC5: On
```

```
DIDR0=0x00;

ADMUX=ADC_VREF_TYPE & 0xff;

ADCSRA=0x84;


// Global enable interrupts

#asm("sei")

}
```