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/*****************************************************
This program was created by the
CodeWizardAVR V3.12 Advanced
Automatic Program Generator
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Project : Lamu Lalu Lintas
Version : 1.2
Date    : 6/24/2019
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Company : STMIK AMIKOM PURWOKERTO
Comments: TI 18 S (18.11.0153 & 18.11.0000)


Chip type               : ATmega16
Program type            : Application
AVR Core Clock frequency: 12.000000 MHz
Memory model            : Small
External RAM size       : 0
Data Stack size         : 256
*****************************************************/

#include <mega16.h>
#include <delay.h>

// Declare your global variables here

int merah   = 4; // desimal, biner : 0b00000100
int kuning  = 2; // desimal  biner : 0b00000010
int hijau   = 1; // desimal  biner : 0b00000001

void main(void)
{
// Declare your local variables here

// Input/Output Ports initialization
// Port A initialization
// Function: Bit7=In Bit6=In Bit5=In Bit4=In Bit3=In Bit2=Out Bit1=Out Bit0=Out
DDRA=(0<<DDA7) | (0<<DDA6) | (0<<DDA5) | (0<<DDA4) | (0<<DDA3) | (1<<DDA2) | (1<<DDA1) | (1<<DDA0);
// State: Bit7=T Bit6=T Bit5=T Bit4=T Bit3=T Bit2=0 Bit1=0 Bit0=0
PORTA=(0<<PORTA7) | (0<<PORTA6) | (0<<PORTA5) | (0<<PORTA4) | (0<<PORTA3) | (0<<PORTA2) | (0<<PORTA1) | (0<<
PORTA0);

// Port B initialization
// Function: Bit7=In Bit6=In Bit5=In Bit4=In Bit3=In Bit2=Out Bit1=Out Bit0=Out
DDRB=(0<<DDB7) | (0<<DDB6) | (0<<DDB5) | (0<<DDB4) | (0<<DDB3) | (1<<DDB2) | (1<<DDB1) | (1<<DDB0);
// State: Bit7=T Bit6=T Bit5=T Bit4=T Bit3=T Bit2=0 Bit1=0 Bit0=0
PORTB=(0<<PORTB7) | (0<<PORTB6) | (0<<PORTB5) | (0<<PORTB4) | (0<<PORTB3) | (0<<PORTB2) | (0<<PORTB1) | (0<<
PORTB0);

// Port C initialization
// Function: Bit7=In Bit6=In Bit5=In Bit4=In Bit3=In Bit2=Out Bit1=Out Bit0=Out
DDRC=(0<<DDC7) | (0<<DDC6) | (0<<DDC5) | (0<<DDC4) | (0<<DDC3) | (1<<DDC2) | (1<<DDC1) | (1<<DDC0);
// State: Bit7=T Bit6=T Bit5=T Bit4=T Bit3=T Bit2=0 Bit1=0 Bit0=0
PORTC=(0<<PORTC7) | (0<<PORTC6) | (0<<PORTC5) | (0<<PORTC4) | (0<<PORTC3) | (0<<PORTC2) | (0<<PORTC1) | (0<<
PORTC0);

// Port D initialization
// Function: Bit7=In Bit6=In Bit5=In Bit4=In Bit3=In Bit2=Out Bit1=Out Bit0=Out
DDRD=(0<<DDD7) | (0<<DDD6) | (0<<DDD5) | (0<<DDD4) | (0<<DDD3) | (1<<DDD2) | (1<<DDD1) | (1<<DDD0);
// State: Bit7=T Bit6=T Bit5=T Bit4=T Bit3=T Bit2=0 Bit1=0 Bit0=0
PORTD=(0<<PORTD7) | (0<<PORTD6) | (0<<PORTD5) | (0<<PORTD4) | (0<<PORTD3) | (0<<PORTD2) | (0<<PORTD1) | (0<<
PORTD0);

// Timer/Counter 0 initialization
// Clock source: System Clock
// Clock value: Timer 0 Stopped
// Mode: Normal top=0xFF
// OC0 output: Disconnected
TCCR0=(0<<WGM00) | (0<<COM01) | (0<<COM00) | (0<<WGM01) | (0<<CS02) | (0<<CS01) | (0<<CS00);
TCNT0=0x00;
OCR0=0x00;

// Timer/Counter 1 initialization
// Clock source: System Clock
// Clock value: Timer1 Stopped
// Mode: Normal top=0xFFFF
// OC1A output: Disconnected
// OC1B output: Disconnected
// Noise Canceler: Off
// Input Capture on Falling Edge
// Timer1 Overflow Interrupt: Off
// Input Capture Interrupt: Off
// Compare A Match Interrupt: Off
// Compare B Match Interrupt: Off
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83      TCCR1A=(0<<COM1A1) | (0<<COM1A0) | (0<<COM1B1) | (0<<COM1B0) | (0<<WGM11) | (0<<WGM10);
84      TCCR1B=(0<<ICNC1) | (0<<ICES1) | (0<<WGM13) | (0<<WGM12) | (0<<CS12) | (0<<CS11) | (0<<CS10);
85      TCNT1H=0x00;
86      TCNT1L=0x00;
87      ICR1H=0x00;
88      ICR1L=0x00;
89      OCR1AH=0x00;
90      OCR1AL=0x00;
91      OCR1BH=0x00;
92      OCR1BL=0x00;
93
94      // Timer/Counter 2 initialization
95      // Clock source: System Clock
96      // Clock value: Timer2 Stopped
97      // Mode: Normal top=0xFF
98      // OC2 output: Disconnected
99      ASSR=0<<AS2;
100     TCCR2=(0<<PWM2) | (0<<COM21) | (0<<COM20) | (0<<CTC2) | (0<<CS22) | (0<<CS21) | (0<<CS20);
101     TCNT2=0x00;
102     OCR2=0x00;
103
104     // Timer(s)/Counter(s) Interrupt(s) initialization
105     TIMSK=(0<<OCIE2) | (0<<TOIE2) | (0<<TICIE1) | (0<<OCIE1A) | (0<<OCIE1B) | (0<<TOIE1) | (0<<OCIE0) | (0<<
        TOIE0);
106
107     // External Interrupt(s) initialization
108     // INT0: Off
109     // INT1: Off
110     // INT2: Off
111     MCUCR=(0<<ISC11) | (0<<ISC10) | (0<<ISC01) | (0<<ISC00);
112     MCUCSR=(0<<ISC2);
113
114     // USART initialization
115     // USART disabled
116     UCSRB=(0<<RXCIE) | (0<<TXCIE) | (0<<UDRIE) | (0<<RXEN) | (0<<TXEN) | (0<<UCSZ2) | (0<<RXB8) | (0<<TXB8);
117
118     // Analog Comparator initialization
119     // Analog Comparator: Off
120     // The Analog Comparator's positive input is
121     // connected to the AIN0 pin
122     // The Analog Comparator's negative input is
123     // connected to the AIN1 pin
124     ACSR=(1<<ACD) | (0<<ACBG) | (0<<ACO) | (0<<ACI) | (0<<ACIE) | (0<<ACIC) | (0<<ACIS1) | (0<<ACIS0);
125     SFIOR=(0<<ACME);
126
127     // ADC initialization
128     // ADC disabled
129     ADCSRA=(0<<ADEN) | (0<<ADSC) | (0<<ADATE) | (0<<ADIF) | (0<<ADIE) | (0<<ADPS2) | (0<<ADPS1) | (0<<ADPS0);
130
131     // SPI initialization
132     // SPI disabled
133     SPCR=(0<<SPIE) | (0<<SPE) | (0<<DORD) | (0<<MSTR) | (0<<CPOL) | (0<<CPHA) | (0<<SPR1) | (0<<SPR0);
134
135     // TWI initialization
136     // TWI disabled
137     TWCR=(0<<TWEA) | (0<<TWSTA) | (0<<TWSTO) | (0<<TWEN) | (0<<TWIE);
138
139     while (1)
140     {
141           PORTA = hijau;
142           PORTB = merah;
143           PORTC = merah;
144           PORTD = merah;
145
146           delay_ms(200);
147           PORTA = kuning;
148           delay_ms(50);
149           PORTA = merah;
150           delay_ms(20);
151
152           PORTB = hijau;
153           delay_ms(200);
154           PORTB = kuning;
155           delay_ms(50);
156           PORTB = merah;
157           delay_ms(20);
158
159           PORTC = hijau;
160           delay_ms(200);
161           PORTC = kuning;
162           delay_ms(50);
163           PORTC = merah;
164           delay_ms(20);
165
166           PORTD = hijau;
167           delay_ms(200);
168           PORTD = kuning;
169           delay_ms(50);
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170         }
171     }
172
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