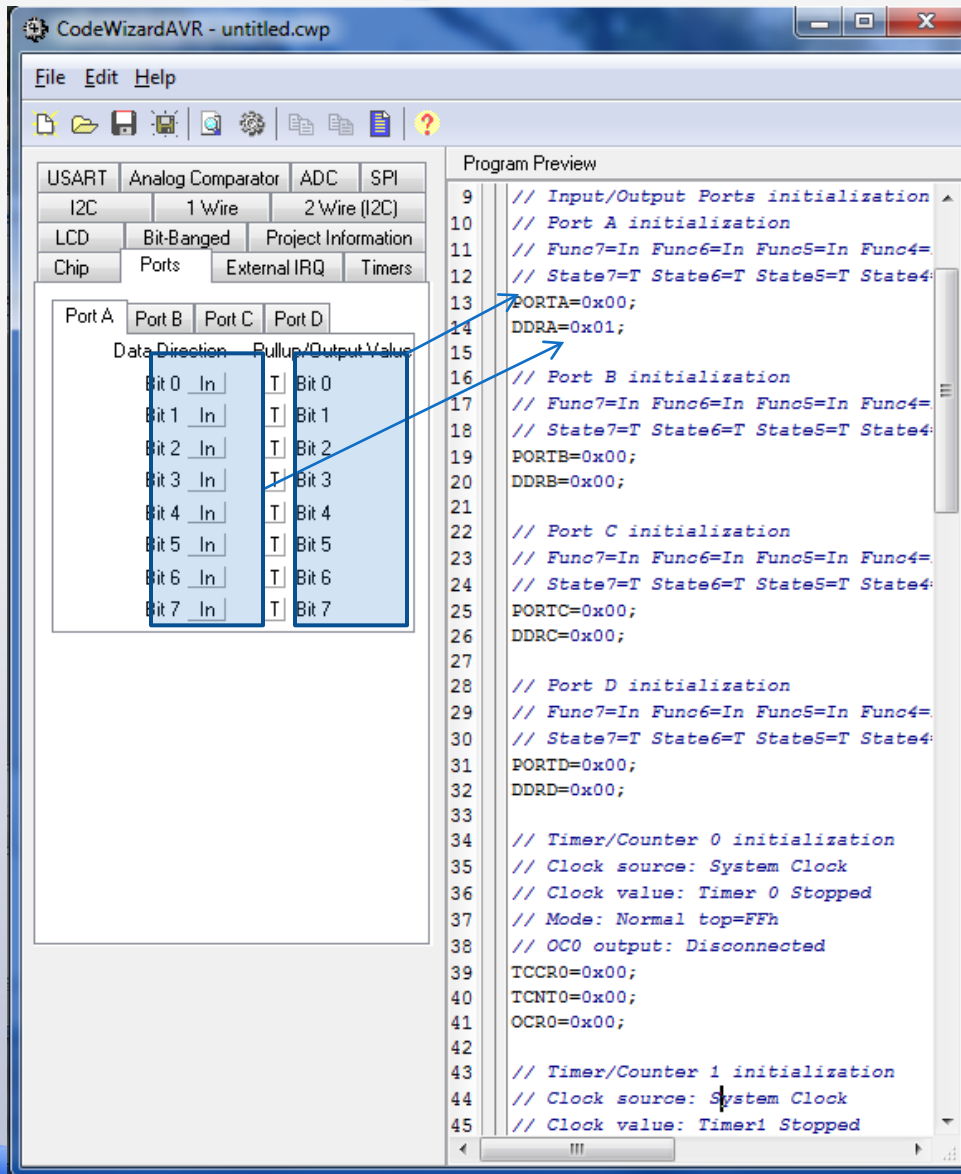


Sistem Mikrokontroler FE UDINUS



Port I/O pada AVR



The screenshot shows the CodeWizardAVR interface. On the left, the 'Ports' section is expanded to show 'Port A' configuration. The 'Data Direction' column is set to 'In' for all bits (Bit 0 to Bit 7), and the 'Pullup/Output Value' column is set to 'T' for all bits. The 'Program Preview' window on the right shows the following code:

```
9 // Input/Output Ports initialization
10 // Port A initialization
11 // Func7=In Func6=In Func5=In Func4=
12 // State7=T State6=T State5=T State4=
13 PORTA=0x00;
14 DDRA=0x01;
15
16 // Port B initialization
17 // Func7=In Func6=In Func5=In Func4=
18 // State7=T State6=T State5=T State4=
19 PORTB=0x00;
20 DDRB=0x00;
21
22 // Port C initialization
23 // Func7=In Func6=In Func5=In Func4=
24 // State7=T State6=T State5=T State4=
25 PORTC=0x00;
26 DDRC=0x00;
27
28 // Port D initialization
29 // Func7=In Func6=In Func5=In Func4=
30 // State7=T State6=T State5=T State4=
31 PORTD=0x00;
32 DDRD=0x00;
33
34 // Timer/Counter 0 initialization
35 // Clock source: System Clock
36 // Clock value: Timer 0 Stopped
37 // Mode: Normal top=FFh
38 // OCO output: Disconnected
39 TCCR0=0x00;
40 TCNT0=0x00;
41 OCR0=0x00;
42
43 // Timer/Counter 1 initialization
44 // Clock source: System Clock
45 // Clock value: Timer1 Stopped
```

PORTA untuk out voltage

P = 1

T = 0

DDRA untuk mengatur port sebagai input atau output

Apabila input semua pin maka DDRA 0x00

Apabila output semua pin maka DDRA 0xFF

Out = 1

In = 0



Contoh

CodeWizardAVR - untitled.cwp

File Edit Help

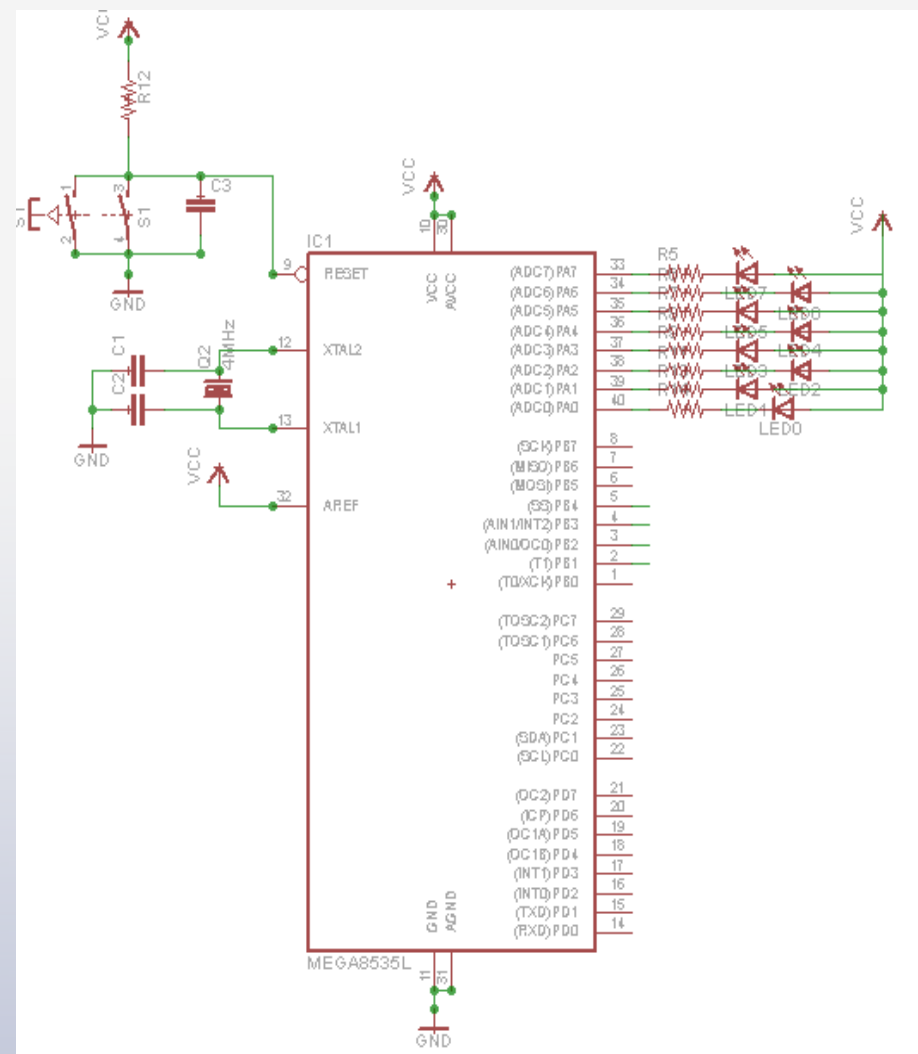
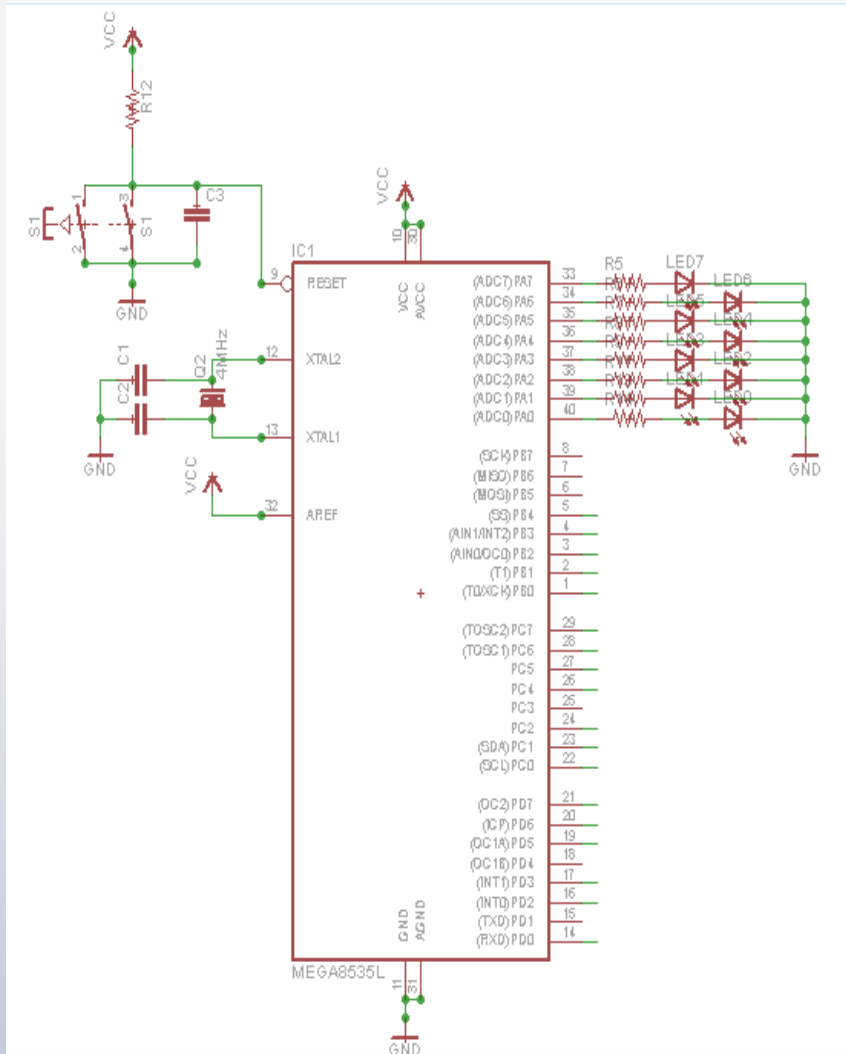
USART Analog Comparator ADC SPI
I2C 1 Wire 2 Wire (I2C)
LCD Bit-Banged Project Information
Chip Ports External IRQ Timers

| Port A | Port B | Port C | Port D |
|----------------|--------|--------|--------|
| Data Direction | | | |
| Bit 0 Out | 0 | 0 | Bit 0 |
| Bit 1 In | P | P | Bit 1 |
| Bit 2 In | P | P | Bit 2 |
| Bit 3 Out | 1 | 1 | Bit 3 |
| Bit 4 In | T | T | Bit 4 |
| Bit 5 In | T | T | Bit 5 |
| Bit 6 In | T | T | Bit 6 |
| Bit 7 In | T | T | Bit 7 |

Program Preview

```
1 #include <mega8535.h>
2
3 // Declare your global variables here
4
5 void main(void)
6 {
7 // Declare your local variables here
8
9 // Input/Output Ports initialization
10 // Port A initialization
11 // Func7=In Func6=In Func5=In Func4=
12 // State7=T State6=T State5=T State4=
13 PORTA=0x00;
14 DDRA=0x00;
15
16 // Port B initialization
17 // Func7=In Func6=In Func5=In Func4=
18 // State7=T State6=T State5=T State4=
19 PORTB=0x0E;
20 DDRB=0x09;
21
22 // Port C initialization
23 // Func7=In Func6=In Func5=In Func4=
24 // State7=T State6=T State5=T State4=
25 PORTC=0x00;
26 DDRC=0x00;
27
28 // Port D initialization
29 // Func7=In Func6=In Func5=In Func4=
30 // State7=T State6=T State5=T State4=
31 PORTD=0x00;
32 DDRD=0x00;
33
34 // Timer/Counter 0 initialization
35 // Clock source: System Clock
36 // Clock value: Timer 0 Stopped
37 // Mode: Normal top=FFh
```





```

PORTA=0xFF;
DDRA=0xFF;

```

```

PORTA=0x00;
DDRA=0xFF;

```



```

97  OCR2=0x00;
98
99  // External Interrupt(s) initialization
100 // INT0: Off
101 // INT1: Off
102 // INT2: Off
103 MCUCR=0x00;
104 MCUCSR=0x00;
105
106 // Timer(s)/Counter(s) Interrupt(s) initialization
107 TIMSK=0x00;
108
109 // Analog Comparator initialization
110 // Analog Comparator: Off
111 // Analog Comparator Input Capture by Timer/Counter 1: Off
112 ACSR=0x80;
113 SFIOR=0x00;
114
115 while (1)
116 {
117     // Place your code here
118
119 }
120
121

```

PORTA=0xFF;

Output pada port A akan bernilai “1”

PORTA=0x00;

Output pada port A akan bernilai “0”



```
Notes a.c
4 Automatic Program Generator
5 © Copyright 1998-2009 Pavel Haiduc, HP InfoTech s.r.l. |
6 http://www.hpinfotech.com
7
8 Project :
9 Version :
10 Date : 9/24/2014
11 Author : NeVaDa
12 Company : Semarang
13 Comments:
14
15
16 Chip type : ATmega8535
17 Program type : Application
18 AVR Core Clock frequency: 11.059200 MHz
19 Memory model : Small
20 External RAM size : 0
21 Data Stack size : 128
22 *****/
23
24 #include <mega8535.h>
25
26 // Declare your global variables here
27
28 void main(void)
29 {
30 // Declare your local variables here
```

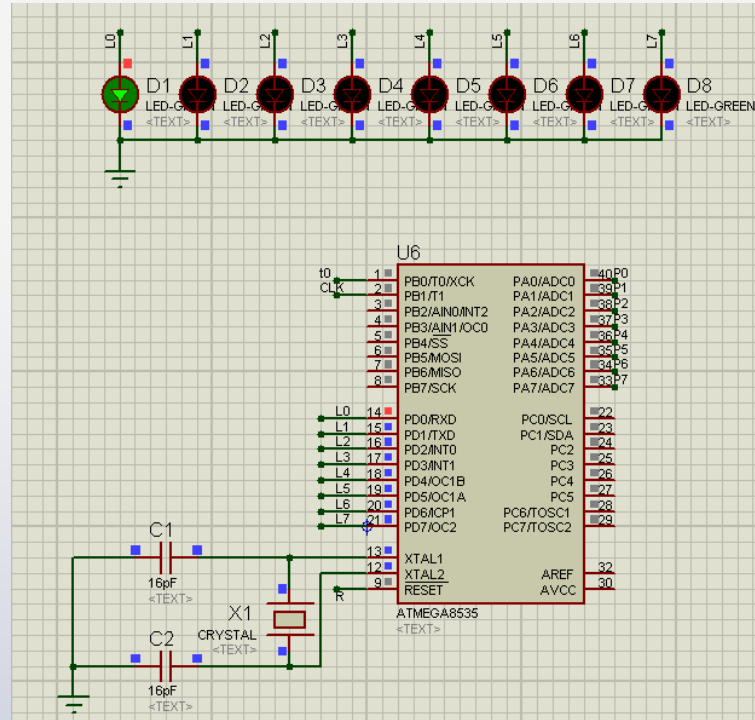
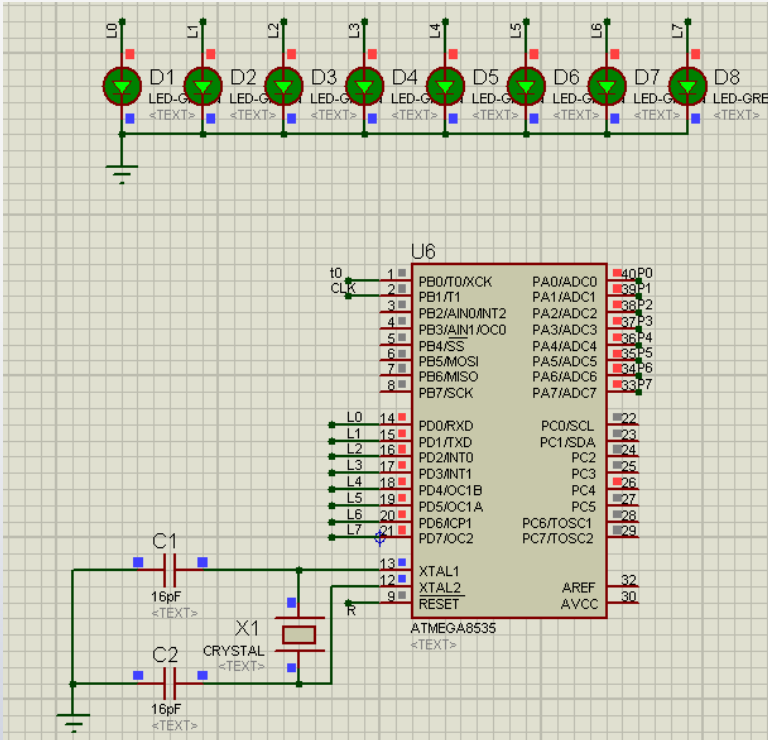


Led nyala-mati

```
while (1)
{
// Place your code here
PORTC=0xFF;
delay_ms(500);
};
}
```

```
13  Comments:
14
15
16  Chip type           : ATmega16
17  Program type        : Application
18  AVR Core Clock frequency: 11.000000 MHz
19  Memory model        : Small
20  External RAM size    : 0
21  Data Stack size     : 256
22  *****/
23
24  #include <mega16.h>
25  #include <delay.h>
26
27  // Declare your global variables here
28
29  void main(void)
30  {
31  // Declare your local variables here
32
33  // Input/Output Ports initialization
34  // Port A initialization
35  // Func7=In Func6=In Func5=In Func4=In Func3=In Func2=In Func1=In Func0=In
36  // State7=T State6=T State5=T State4=T State3=T State2=T State1=T State0=T
37  PORTA=0xFF;
38  DDRA=0xFF;
39
```



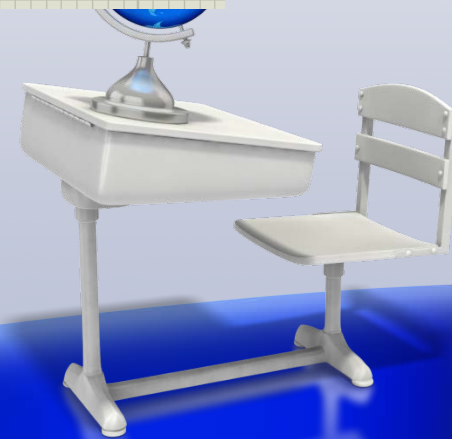


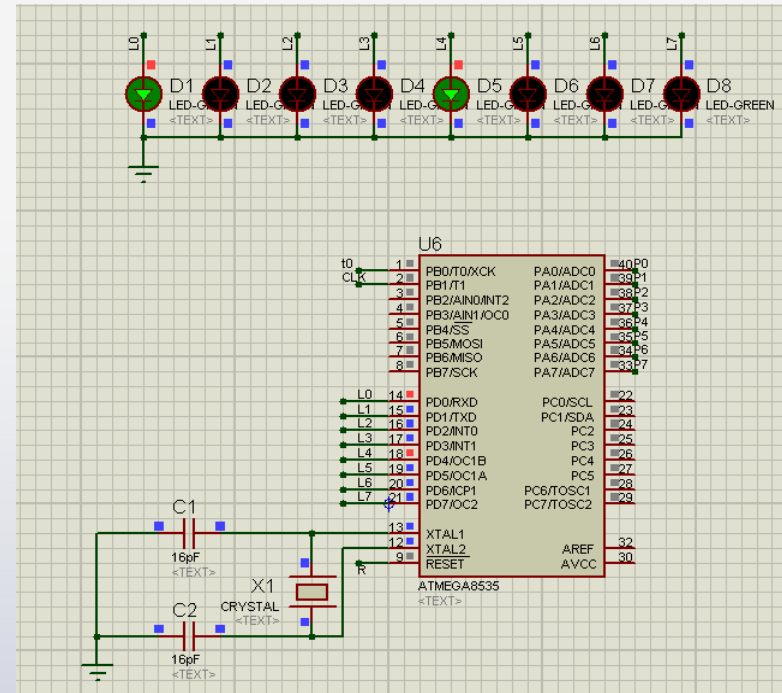
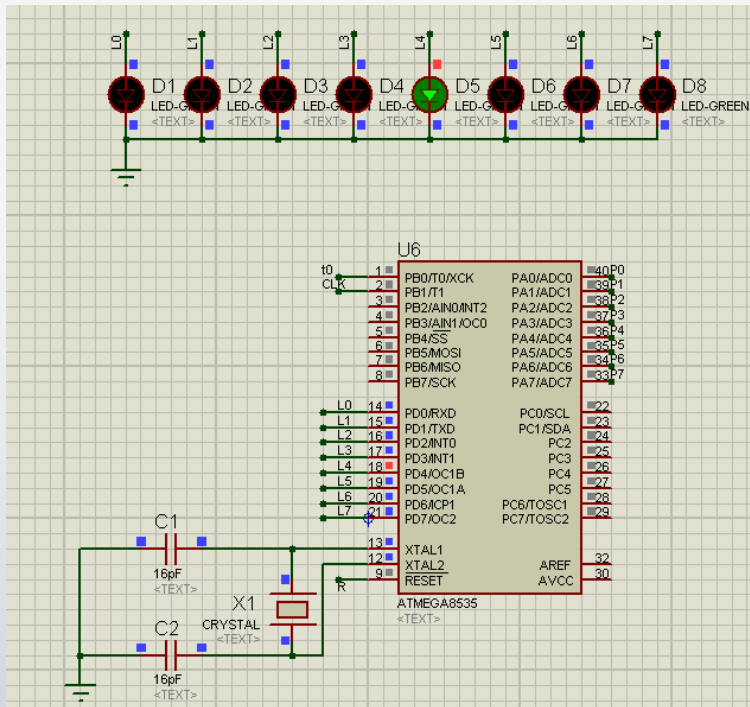
while (1)

```
{
// Place your code here
PORTC=0xFF;
};
```

while (1)

```
{
// Place your code here
PORTC=0x01;
};
```



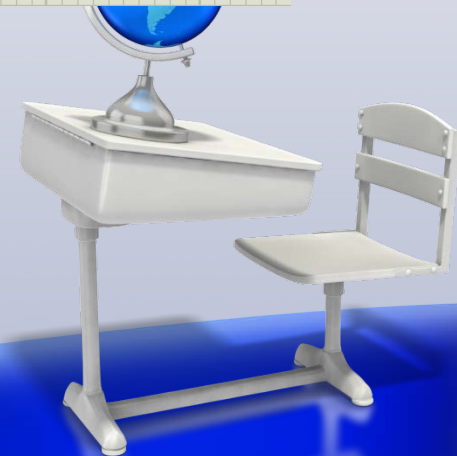


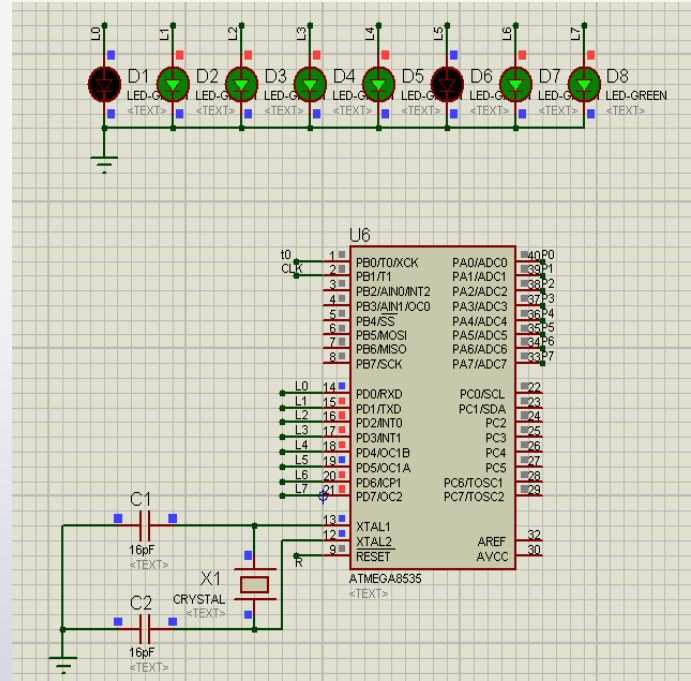
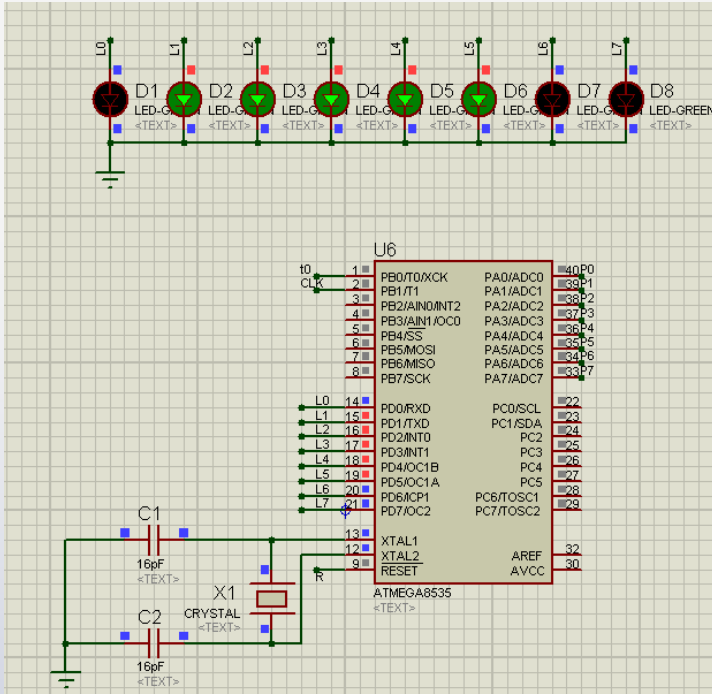
while (1)

```
{
// Place your code here
PORTC=0x10;
};
```

while (1)

```
{
// Place your code here
PORTC=0x01;
};
```





while (1)

{

// Place your code here

PORTC=0x3E;

};

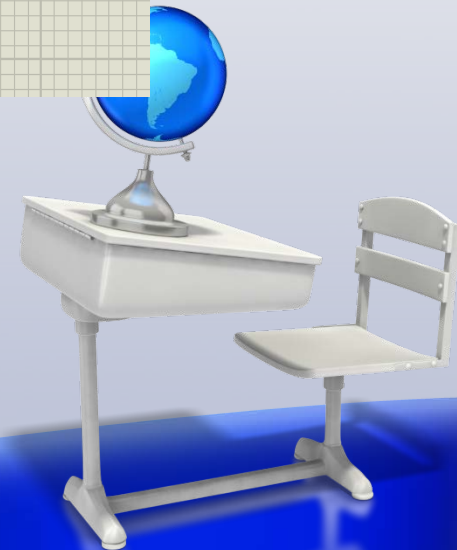
while (1)

{

// Place your code here

PORTC=0xDE;

};



```
while (1)
```

```
{  
PORTD=0x01;  
delay_ms(500);  
PORTD=0x02;  
delay_ms(500);  
PORTD=0x04;  
delay_ms(500);  
PORTD=0x08;  
delay_ms(500);  
PORTD=0x10;  
delay_ms(500);  
PORTD=0x20;  
delay_ms(500);  
PORTD=0x40;  
delay_ms(500);  
PORTD=0x80;  
delay_ms(500);
```

```
while (1)
```

```
{  
PORTD= 1;  
delay_ms(250);  
PORTD= 2;  
delay_ms(250);  
PORTD= 4;  
delay_ms(250);  
PORTD= 8;  
delay_ms(250);  
PORTD= 16;  
delay_ms(250);  
PORTD= 32;  
delay_ms(250);  
PORTD= 64;  
delay_ms(250);  
PORTD= 128;  
};delay_ms(250);  
}
```

```
};
```

```
while (1)
```

```
{  
PORTD=0b00000001;  
delay_ms(100);  
PORTD=0b00000010;  
delay_ms(100);  
PORTD=0b00000100;  
delay_ms(100);  
PORTD=0b00001000;  
delay_ms(100);  
PORTD=0b00010000;  
delay_ms(100);  
PORTD=0b00100000;  
delay_ms(100);  
PORTD=0b01000000;  
delay_ms(100);  
PORTD=0b10000000;  
delay_ms(100);
```

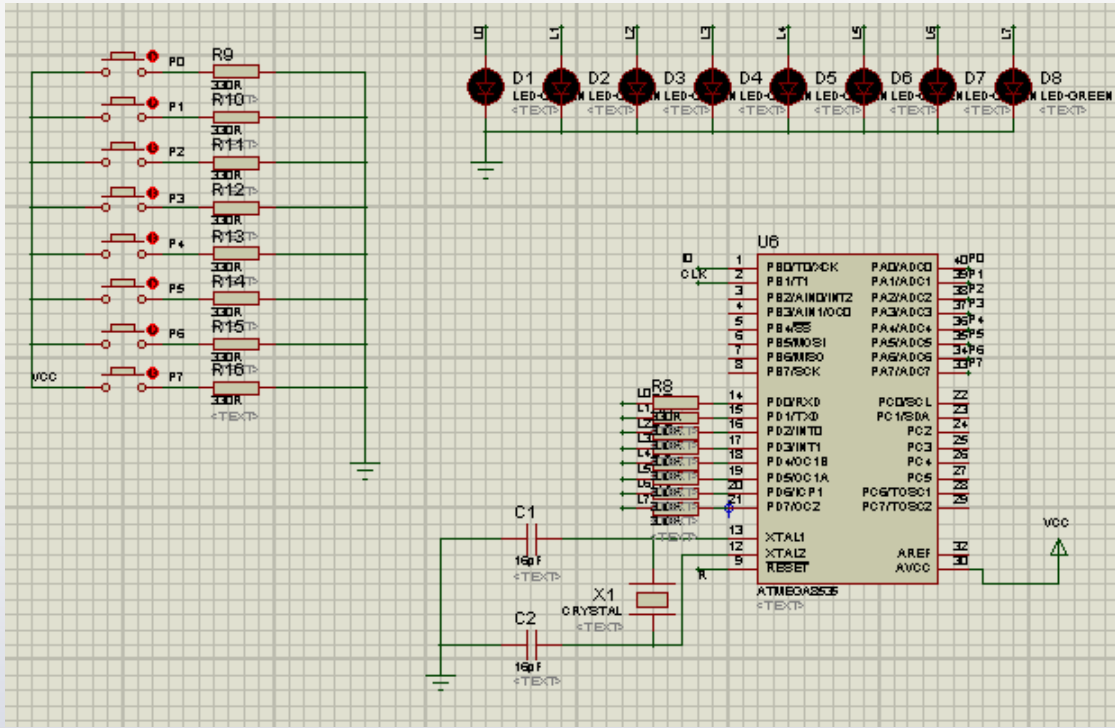
```
};
```



```
while (1)
{
/* if (kanan ==0b00000001) kanan = 0b10000000; // geser kekiri
else kanan >>= 1;
PORTD = kanan;
delay_ms(100); */

if (kanan ==0b00000001) kanan = 0b10000000; //geser kekanan
else kiri <<= 1;
PORTD = kiri;
delay_ms(100);
};
}
```





```

while (1)
{
// Place your code here
PORTD=PINA;
};
}

```



```

while (1)
{
    if(PINA.0==1) {PORTD=0x18;}

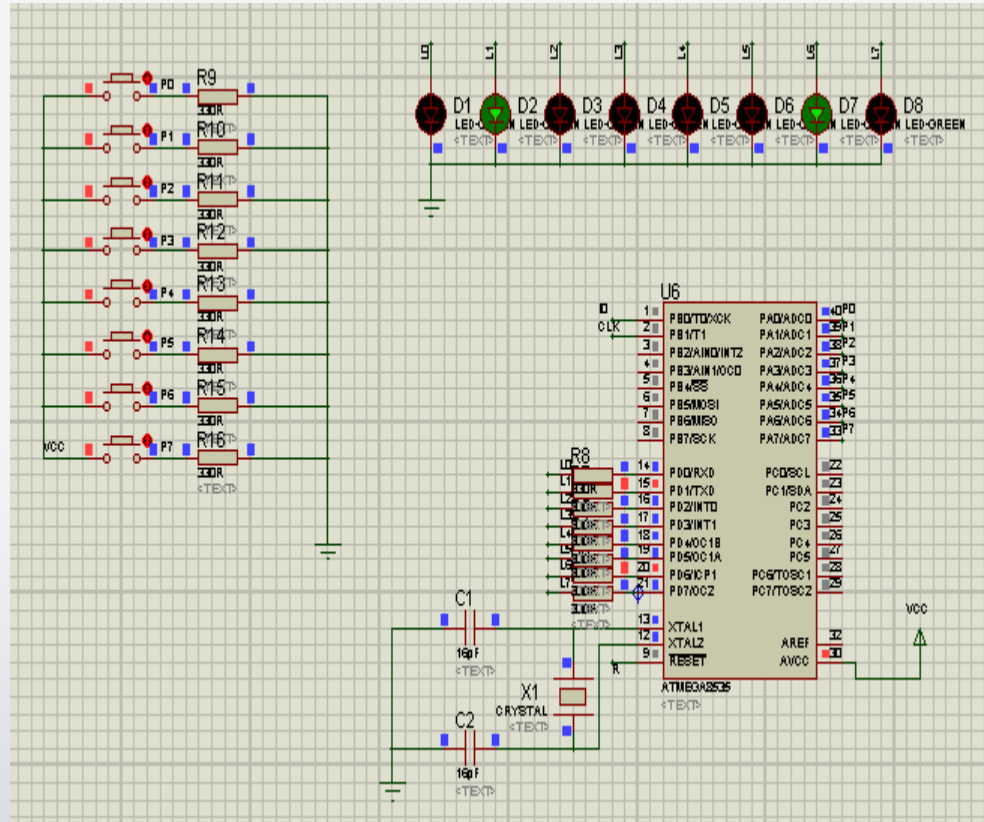
    if(PINA.1==1) {PORTD=0xFF;}

    if(PINA.2==1) {PORTD=0x42;}

    if(PINA.3==1) {PORTD=0x61;}

}

```





TERIMA KASIH

