

به نام خدا

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سوال 1

```
1  #include <avr/io.h>
2
3  int main(void)
4  {
5      unsigned int z;
6      DDRB = 0xFF; // PORTB is output
7      for (z = 0; z < 50000; z++)
8      {
9          PORTB = 0x55;
10         PORTB = 0xAA;
11     }
12     while (1)
13         ;
14     return 0;
15 }
```

سوال 2

```
1  #include <avr/io.h>
2
3  void delay100ms(void)
4  {
5      unsigned int i;
6      for (i = 0; i < 42150; i++);
7  }
8
9  int main(void)
10 {
11     DDRB = 0xFF; // PORTB is output
12     while (1)
13     {
14         PORTB = PORTB | 0b00010000; // set bit 4(5th bit) of PORTB
15         delay100ms();
16         PORTB = PORTB & 0b11101111; // clear bit 4(5th bit) of PORTB
17         delay100ms();
18     }
19
20     return 0;
21 }
```

سوال 3

```
1  #include <avr/io.h>
2  #include <util/delay.h>
3
4  void delay_ms(int d)
5  {
6      _delay_ms(d);
7  }
8
9  int main(void)
10 {
11     DDRB = 0xFF; // PORTB is output
12     while (1)
13     {
14         PORTB = PORTB | 0b00010000; // set bit 4(5th bit) of PORTB
15         delay_ms(100);                // 100ms
16         PORTB = PORTB & 0b11101111; // clear bit 4(5th bit) of PORTB
17         delay_ms(100);                // 100ms
18     }
19
20     return 0;
21 }
```

```
1  #include <avr/io.h>
2  int main(void)
3  {
4      unsigned char temp;
5      DDRB = 0;    // PORTB is input
6      DDRC = 0xFF; // PORTC is output
7      DDRD = 0xFF; // PORTD is output
8
9      while (1)
10     {
11         temp = PINB;
12         if (temp % 2 == 0)
13             PORTC = 'E';
14         else
15             PORTD = 'O';
16     }
17
18     return 0;
19 }
20
```