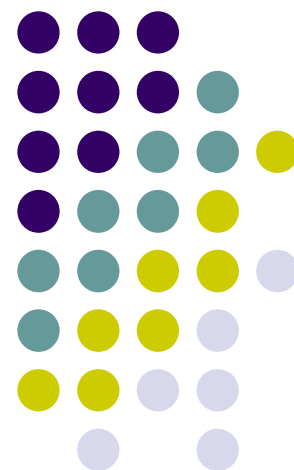
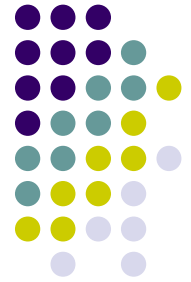


习题讲解

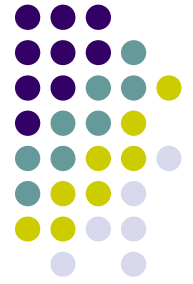
程序设计部分



3-19: 查找内部RAM的30H~50H单元是否有0FF这一数，若有则将51H单元置为01H，若没找到则将51H单元置为00H。



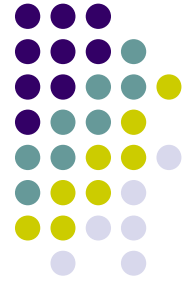
```
ORG 1000H
MOV R1,#51H
MOV R2,#21H
MOV R0,#30H
MOV R3,#00H
LP0: MOV @R0,R3
      CJNE R0,#50H LP1
      AJMP LP2
LP1:  INC R0
      INC R3
      AJMP LP0
LP2:  CJNE @R0,#0FFH LP3
      MOV @R1,#01H
      SJMP $
LP3:  DEC R0
      DJNZ R2,LP2
      END
```



补充题:

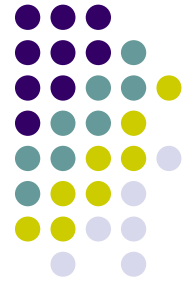
设晶振频率为**12MHz**，累加器里是十进制数，初值为**0**：试编程每隔**1ms**让累加器增**1**，当累加器增至**100**时，**P1.0**口输出反相，同时累加器返回初值，重复循环。

补充题(解一)



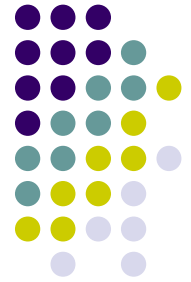
```
ORG 1000H
MOV A, #0
LOOP0:    MOV R0, #250
LOOP:    NOP
        NOP
        DJNZ R0, LOOP
        INC A
        CJNE A, #100, LOOP0
        CPL P1.0
        CLR A
        SJMP LOOP0
END
```

补充题(解二)



```
LOOP1: MOV A,#00H
DELAY: MOV R7,#25
      DL1: MOV R6,#20
          DL2: DJNZ R6,DL2
              DJNZ R7,DL1
LOOP2: INC A
      CJNE A,#100,DELAY
LOOP3: CPL P1.0
      SJMP LOOP1
```

4-11: 若以2500H单元为首地址的外部RAM中有30个连续存放的数据，请按从大到小的次序排好后再存放在这30个单元中。



```
ORG 1000H
MOV DPTR,#2500H
CLR A
MOV A,#20H
MOVX @DPTR,A
INC DPTR
```

...

;预赋值

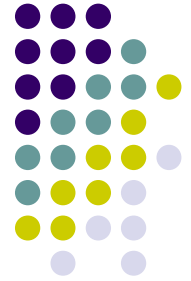
```
LCALL AGERU1
SOFUTO:  MOV R0,#30H
          MOV R7,#29
          CLR F0
```

```
KURABERU:  MOV 2BH,@R0
            INC R0
            MOV A,@R0
            MOV 2AH,A
            CLR C
            SUBB A,2BH
            JC KAERU
            MOV @R0,2BH
            DEC R0
            MOV @R0,2AH
            INC R0
            SETB F0
KAERU:      DJNZ R7,KURABERU
            JB F0, SOFUTO
            LCALL AGERU2
            SJMP $
```



```
AGERU1:  MOV R6,#30
          MOV R0,#30H
          MOV DPTR,#2500H
KURIKAE1: MOVX A,@DPTR
          MOV @R0,A
          INC DPTR
          INC R0
          DJNZ R6,KURIKAE1
          RET
```





```
AGERU2:  MOV R6,#30
          MOV R0,#30H
          MOV DPTR,#2500H
KURIKAE2: MOV A,@R0
          MOVX @DPTR,A
          INC R0
          INC DPTR
          DJNZ R6,KURIKAE2
          RET
END
```

4-11(续)

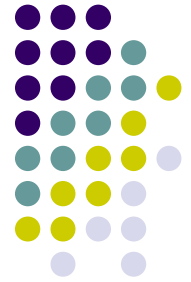
```
ORG 1000H
MAIN:    MOV R7,#29           ;初始化循环次数
          MOV DPTR,#2500H

START:   CLR F0
          MOV A,R7
          MOV R6,A           ;赋循环次数
          MOVX A,@DPTR       ;取数
          MOV 40H,A          ;存前数于40H
          INC DPL
          MOVX A,@DPTR
          MOV 41H,A          ;存后数于41H
          CLR C
          SUBB A,40H
          JC NEXT            ;前数大，不交换
          MOV A,41H          ;否则，交换
          DEC DPL
          MOVX @DPTR,A
          INC DPL
          MOV A,40H
          MOVX @DPTR,A
          SETB F0
```



4-11(续)

```
NEXT:  DJNZ R6,LOOP
        DEC R7
        JB F0,START
HERE:  SJMP HERE
        END
```





5-5: 晶振为12MHz的8051单片机，编程使P1.0端输出频率为20KHz的方波。

- 方波周期 $T' = 1/f = 50\mu s$
- 定时时间 $= T'/2 = 25\mu s$
- 机器周期 $T = 1\mu s$
- 定时器T0方式0的初值计算:

$$\text{定时时间} = (2^{13} - \text{T0初值}) \times \text{机器周期}$$

$$\Rightarrow 25\mu s = (2^{13} - \text{T0初值}) \times 1\mu s$$

$$\Rightarrow \text{T0初值} = 8167 = 1FE7$$

$$\Rightarrow \text{TH0} = 0FFH, \text{TL0} = 07H$$

5-5(续)

- T0方式2的初值:

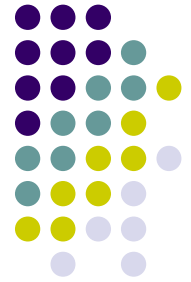
$$25\mu s = (2^8 - \text{T0初值}) \times 1\mu s$$

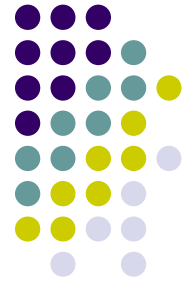
=> T0初值=231=0E7H

```
ST:  MOV TMOD,#02H
      MOV TH0,#0E7H
      MOV TL0,#0E7H
      SETB TR0

WT:  JBC TF0,WV
      SJMP WT

WV:  CLP P1.0
      SJMP WT
      END
```





5-6: 晶振频率为6MHz的8051单片机，使用定时器T1以定时方式在P1.1端输出周期为500us，占空比为5:1的矩形脉冲。

- 定时时间 $T_1'=100\mu s$; $T_2'=400\mu s$
- 机器周期 $T=2\mu s$
- 定时器T1方式1计算初值:

$$100\mu s = (2^{16} - \text{T1初值}) \times 2\mu s$$

$$\Rightarrow \text{T1初值} = 65486 = \text{FFCEH}$$

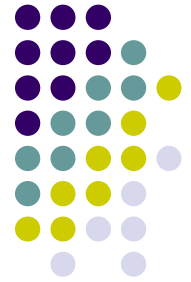
$$\Rightarrow \text{TH1} = 0\text{FFH}; \text{TL1} = 0\text{CEH}$$

$$400\mu s = (2^{16} - \text{T1初值}) \times 2\mu s$$

$$\Rightarrow \text{T1初值} = 65336 = \text{FF38H}$$

$$\Rightarrow \text{TH1} = 0\text{FFH}; \text{TL1} = 38\text{H}$$

5-6(解)



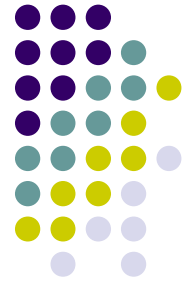
```
START:    MOV TMOD,#10H
WH0:      MOV TH1,#0FFH
          MOV TL1,#0CEH
          SETB P1.1
          SETB TR1
WH1:      JBC TF1,WL0
          SJMP WH1
WL0:      MOV TH1,#0FFH
          MOV TL1,#38H
          CPL P1.1
WL1:      JBC TF1,WH0
          SJMP WL1
          END
```

5-7: 单片机晶振频率为6MHz，用定时器T0进行外部事件计数，每计数1000个脉冲后，定时器T1 开始10ms定时，定时10ms后，又转为T0计数方式，如此循环，采用方式1实现。



- 机器周期 $T=2\mu s$
- T1方式1定时10ms
$$10ms = (2^{16} - T1\text{初值}) \times 2\mu s$$
 - $\Rightarrow T1\text{初值}=60536=EC78H$
 - $\Rightarrow TH1=0ECH; TL1=78H$
- T0方式1计数1000
$$(2^{16} - T0\text{初值})=1000$$
 - $\Rightarrow T0\text{初值}=64536=FC18H$
 - $\Rightarrow TH0=0FCH; TL0=18H$

5-7(解)



```
MAIN:      MOV TMOD,#05H
            MOV TH0,#0FCH
            MOV TL0,#18H
            SETB TR0
COUNT:    JBC TF0,DELAY
            AJMP COUNT
DELAY:      CLR TR0
            MOV TMOD,#10H
            MOV TH0,#0ECH
            MOV TL0,#78H
            SETB TR1
DELAY1:    JBC TF1,NEXT
            AJMP DELAY1
NEXT:      CLR TR1
            AJMP MAIN
            END
```