

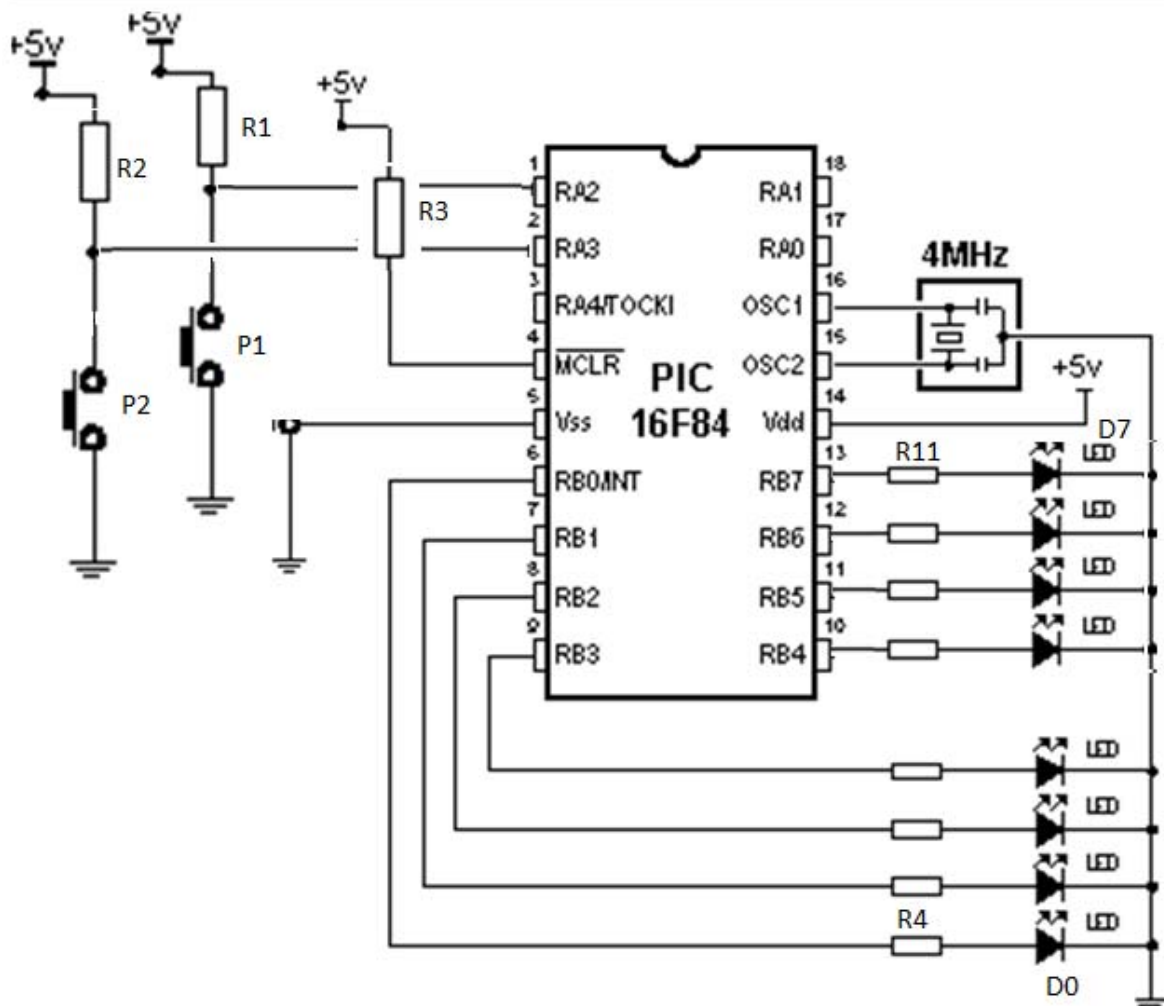
Course name: Practical App. CS II
 Course Code: -
 Lecturer: Dr. Ahmed ElShafee

Exam number: Midterm2, model answer
 Exam Date: 26/05/2013
 Time Allowed: 60 minutes

Name: _____
 ID: _____

[1]	[2]	[3]	[4]	Total
/5	/5	/2.5	/7.5	/20

[1] for the following schematic PIC16f84A microcontroller, write an assembly program that make leds (D0 →D7) counts up when pressing P1, and counts down when pressing P2



Complete the following code with “up”, and “down” macros

```

.ORG 000
    GOTO start
.org 004
    GOTO start
DELAY1S:
    MOVLW 0X05
    MOVWF 0X0E
DELAY1S_WAIT1:
    MOVLW 0XFF
    MOVWF 0X0D
DELAY1S_WAIT2:
    MOVLW 0XFF
    MOVWF 0X0C
DELAY1S_WAIT3:
    DECFSZ 0X0C,F
    GOTO DELAY1S_WAIT3
    DECFSZ 0X0D,F
    GOTO DELAY1S_WAIT2
    DECFSZ 0X0E,F
    GOTO DELAY1S_WAIT3
    RETURN
start:
    Bsf STATUS, RP0
    movlw b'00000000'
    movwf TRISB
    movlw b'11111111'
    movwf TRISA
    Bcf STATUS, RP0
    Movlw 0X00
    Movwf 0x0f
Loop:
    btfss porta,2
    call up
    btfss porta,3
    call down
    call DELAY1S
    goto loop
up:
    .....
    .....
    Return
down:
    .....
    .....

return
  
```



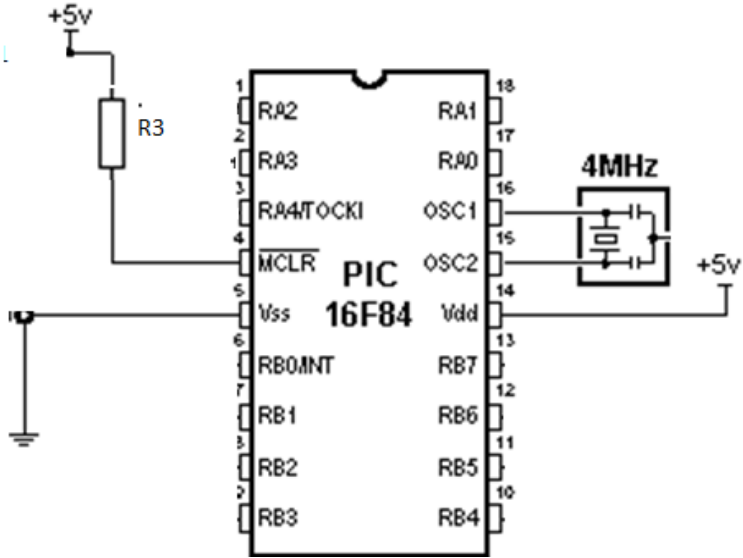
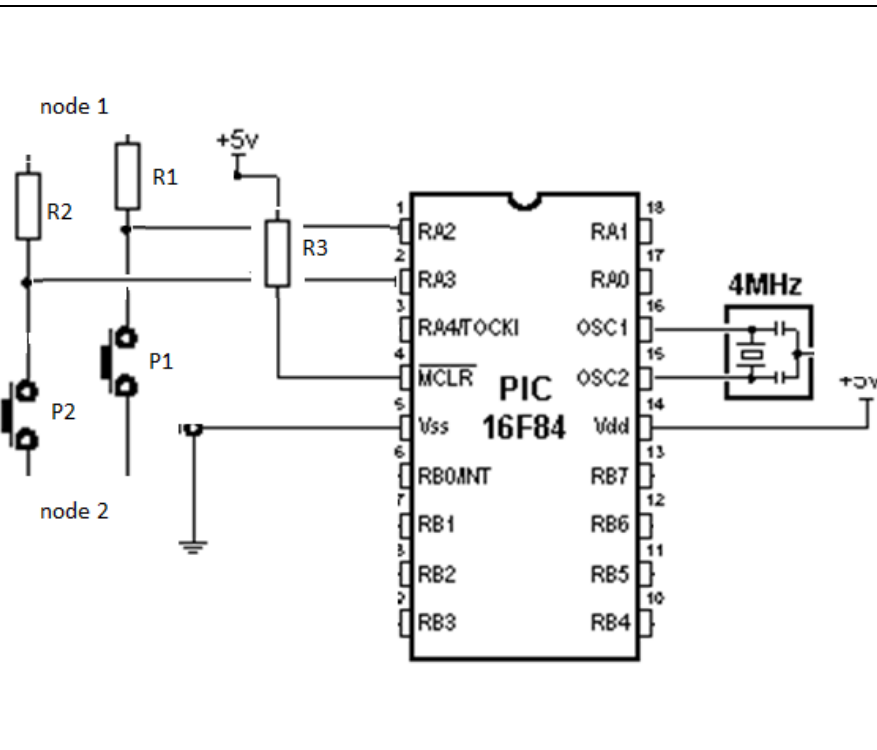
up:

```
incf 0x10,1  
movf 0x10,w  
movwf portb  
return
```

down:

```
decf 0x10,1  
movf 0x10,w  
movwf portb  
return
```

[2] complete the following table

Q	Answer
Value of R1, R2	10K
R3	10K
R4 → R11	100 ohm
Add a press (P3) to act as hard reset for microcontroller	
Reconnect press P1, and P2 to change its configuration from active low to active high or from active high to active low	

[3] we need to connect an AC lamp to pin 13 of the following arduino microcontroller.

3.1 state the required components

#	Component name	Value
1	Power socket	
2	Relay 12V	
3	R = 100ohm	
4	4N35	

3.2 draw the interface connection.

