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FAM

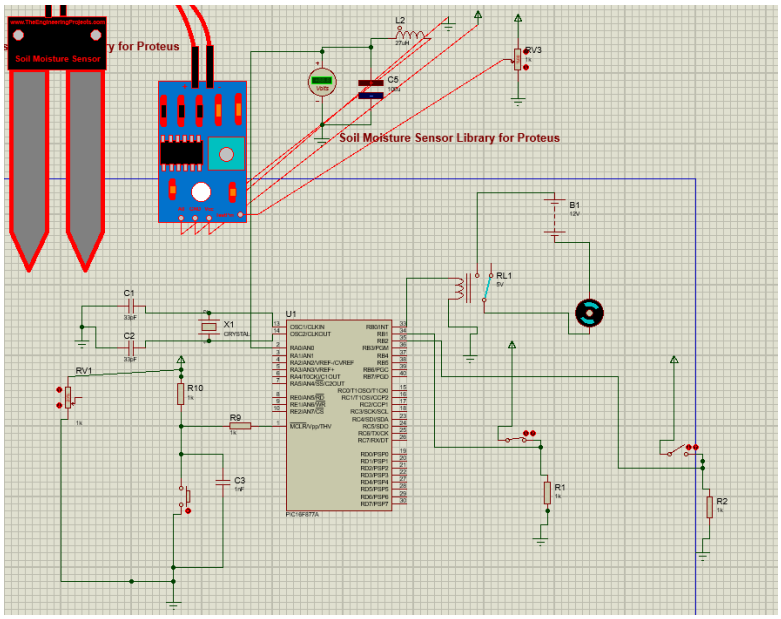
Embedded systems assignment 2

1.Code the PIC and demonstrate at the end of assignment deadline.

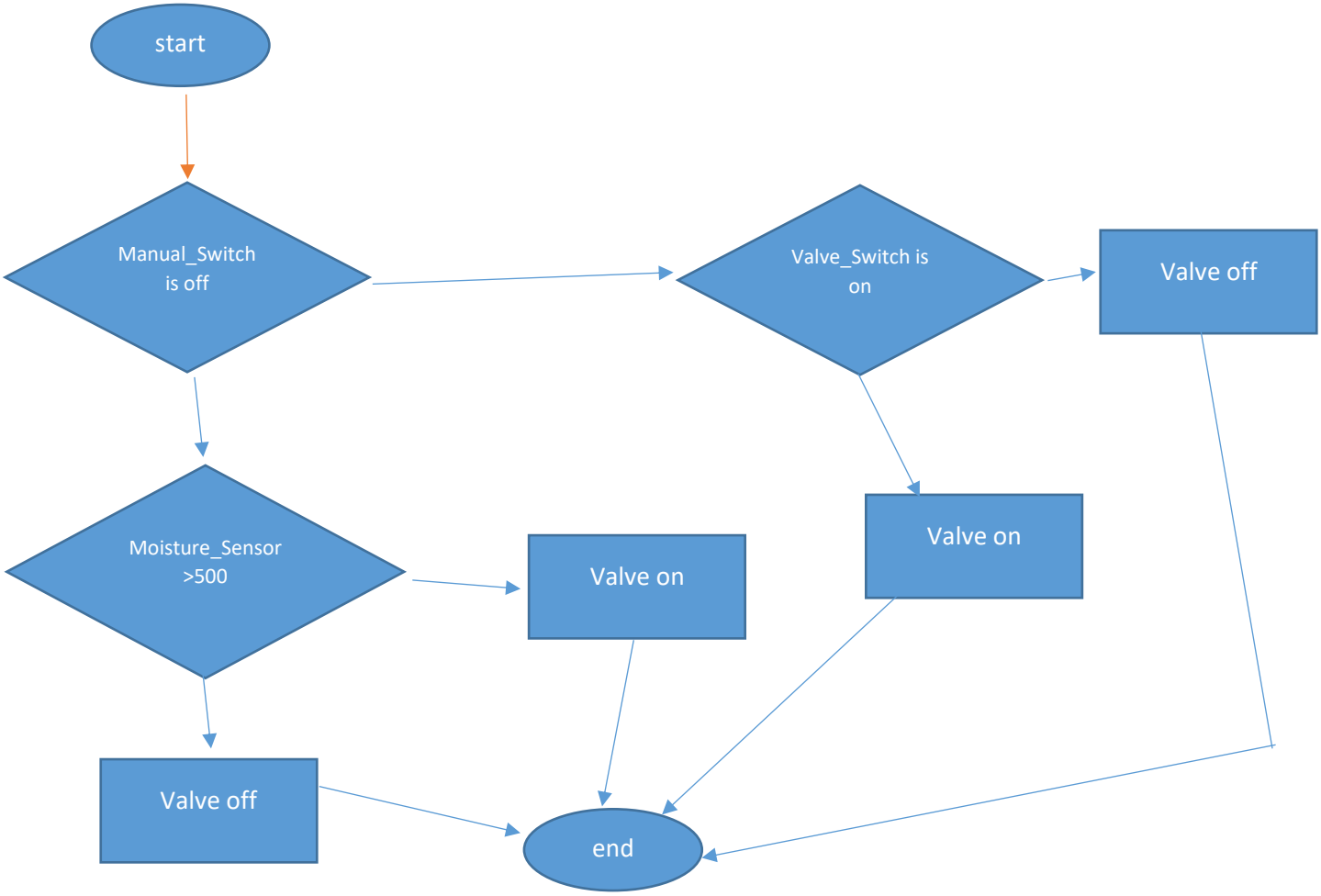
```
int valADC;
char x[4];
void main(){
//initialise input outputs
        trisb.b1=1;
        trisb.b2=1;
        trisc=0;
        portc=0;
//initialise adc
        ADC_Init();
//initialise pwm
        PWM1_Init(5000);
        PWM1_Start();
        PWM2_Init(5000);
        PWM2_Start();

             trisb.b0=0;
        while(1){

        if(portb.b1==1){//Manual mode is off read moisture sensore
         valADC=ADC_Read(0);
         if(valADC>500){//below certain level valve on
         PORTB.B0=1;}
        else{
          PORTB.B0=0;
        }  }else{
                if(portb.b2==1){ //Manual mode is on read switch
                     PORTB.B0=1;
                }
                else{
```

```
    PORTB.B0=0;
  }

  }
    PWM1_Set_Duty(255);
    PWM2_Set_Duty(255);
    portc.rb0=0;
    Delay_ms(100);
    PWM1_Set_Duty(100);
    PWM2_Set_Duty(100);
    portc.rb0=1;
    Delay_ms(100);
     PWM1_Set_Duty(150);
    PWM2_Set_Duty(00);
    portc.rb0=0;
    Delay_ms(100);

  }
}
```

2.Implementthe circuit for the whole system.

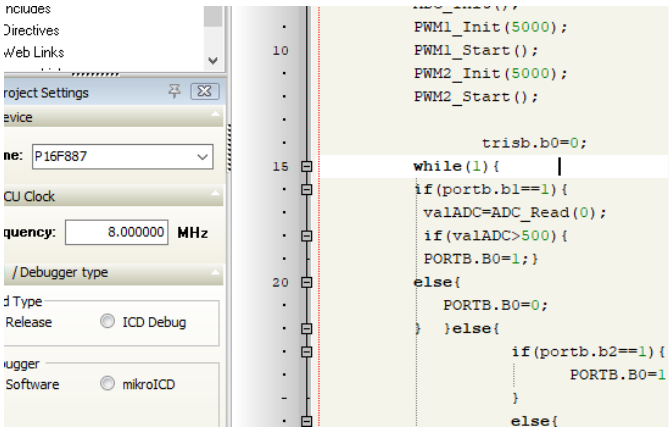


3.Provide flowchart (software diagram[4]) of your code. Add comments to code lines.



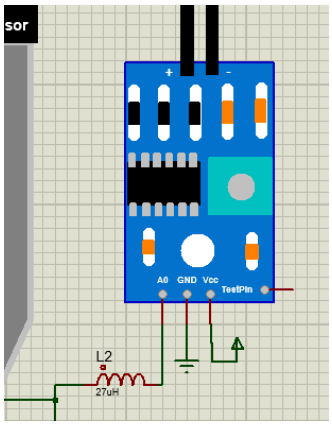
4.Showe vidence of your debugging activities, each time the system did not work as expected.

1-Wrong pic version was selected



2-forgot to initialise ADC using ADC init

3-Didn't connect the test pin in moisture sensor



5-Adaptthe code to produce well-structured and reliable code.

```
int valADC;

char x[4];

void main(){

//initialise input outputs

        trisb.b1=1;

        trisb.b2=1;

        trisc=0;

        portc=0;

//initialise adc
```

```
        ADC_Init();
//initialise pwm
        PWM1_Init(5000);
        PWM1_Start();
        PWM2_Init(5000);
        PWM2_Start();

            trisb.b0=0;
        while(1){

        if(portb.b1==1){//Manual mode is off read moisture sensore
         valADC=ADC_Read(0);
         if(valADC>500){//below certain level valve on
         PORTB.B0=1;}
        else{
          PORTB.B0=0;
        }  }else{
                if(portb.b2==1){ //Manual mode is on read switch
                    PORTB.B0=1;
                }
                else{
          PORTB.B0=0;
        }

        }
          PWM1_Set_Duty(255);
          PWM2_Set_Duty(255);
          portc.rb0=0;
          Delay_ms(100);
          PWM1_Set_Duty(100);
          PWM2_Set_Duty(100);
```

```
          portc.rb0=1;
          Delay_ms(100);
           PWM1_Set_Duty(150);
          PWM2_Set_Duty(00);
          portc.rb0=0;
          Delay_ms(100);

        }
}
int valADC;
char x[4];
void main(){
//initialise input outputs
        trisb.b1=1;
        trisb.b2=1;
        trisc=0;
        portc=0;
//initialise adc
        ADC_Init();
//initialise pwm
        PWM1_Init(5000);
        PWM1_Start();
        PWM2_Init(5000);
        PWM2_Start();

            trisb.b0=0;
        while(1){

        if(portb.b1==1){//Manual mode is off read moisture sensore
         valADC=ADC_Read(0);
         if(valADC>500){//below certain level valve on
```

```
 PORTB.B0=1;}
        else{
          PORTB.B0=0;
        } }else{
              if(portb.b2==1){ //Manual mode is on read switch
                  PORTB.B0=1;
              }
              else{
          PORTB.B0=0;
        }

        }
          PWM1_Set_Duty(255);
          PWM2_Set_Duty(255);
          portc.rb0=0;
          Delay_ms(100);
          PWM1_Set_Duty(100);
          PWM2_Set_Duty(100);
          portc.rb0=1;
          Delay_ms(100);
           PWM1_Set_Duty(150);
          PWM2_Set_Duty(00);
          portc.rb0=0;
          Delay_ms(100);

        }
}
```

6.Evaluate the previous system correctness and speed.

The previous system uses a test pin for the moisture sensor since there is no soil to test the sensor.

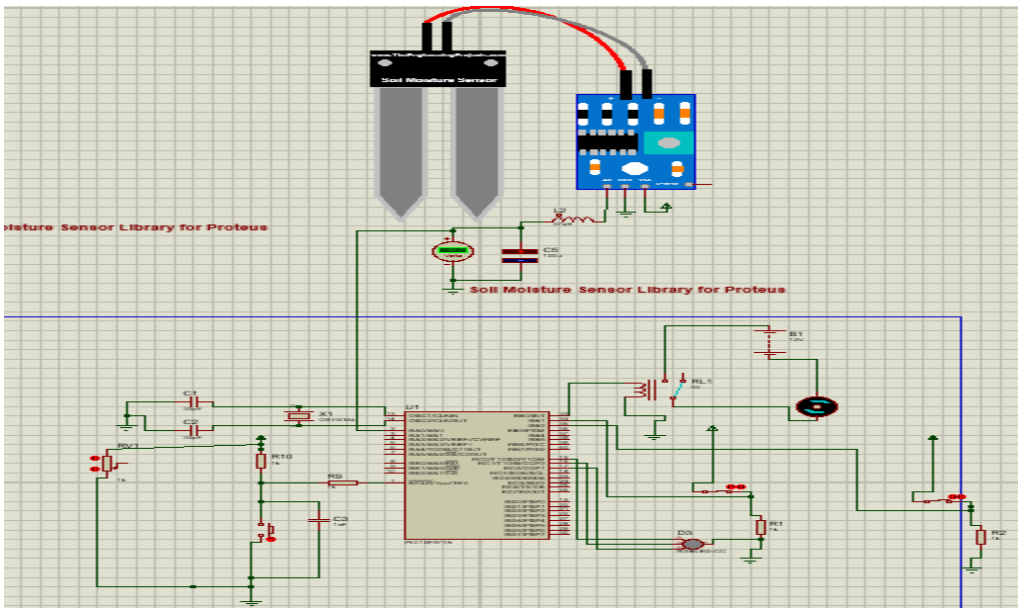
The ADC reading decides whether to activate the valve in automatic mode, while in manual mode the valve is only controlled via a switch.

Task2

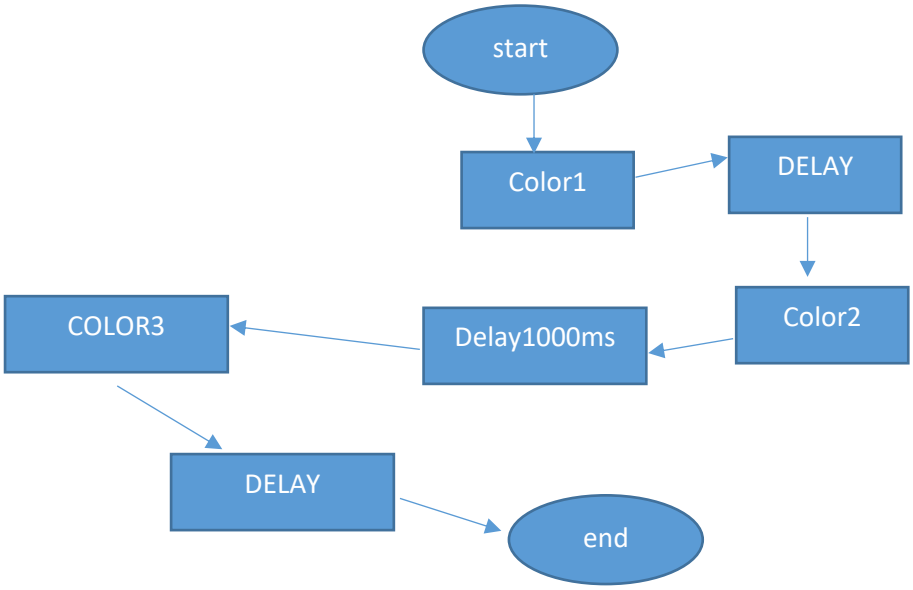
1.Code the PIC and demonstrate at the end of assignment deadline.

```
PWM1_Init(5000);
        PWM1_Start();
        PWM2_Init(5000);
        PWM2_Start();
While(1){
PWM1_Set_Duty(255);
          PWM2_Set_Duty(255);
          portc.rb0=0;
          Delay_ms(100);
          PWM1_Set_Duty(100);
          PWM2_Set_Duty(100);
          portc.rb0=1;
          Delay_ms(100);
           PWM1_Set_Duty(150);
          PWM2_Set_Duty(00);
          portc.rb0=0;
          Delay_ms(100);
}
```

2.Implement the circuit for the whole system.



3.Provideflowchart of your code.



4.Showevidence of your debugging activities, each time the system did not work as expected.

Didn't initialise PWM using PWM start.

Use wrong RGB_LED CA