CO REPORT

TOPIC :- AUTOMATIC IRRIGATION SYSTEM

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In this design of Water Irrigation System, we will have a Humidity Sensor embedded in the soil to monitor the soil humidity. This sensor is connected to the Control Board. Control Board has 8051 microcontroller and different other components to monitor the soil humidity level from the output given by the sensor. Whenever soil humidity level goes below a certain threshold level BLUE LED will glow indicating "Low Soil Moisture" and then signal will send to the servo motor to open the valve to allow the water flow in the field. As the soil moisture level goes above the threshold level water stops flowing and the LED is switched off to indicate moisture level is above the threshold level.

Architectural Components :-

- 8051 Microcontroller (Atmel **AT89S52)**
- Humidity Sensor
- Servo Motor
- LCD Display

Computer Architecture Aspects Implemented :

1. Interrupt Programming :

Sensors trigger the external interrupts on the 8051. The corresponding ISR initiates the water deposition algorithm, and another interrupt detects when to stop the water flow from the reservoir.

2. Timer Programming :

Water from the reservoir is sent to the plant in discrete quantities after fixed intervals of time.To maintain regularity of time period after which water is deposited again,timers are used.

3. Addressing Modes :

Various addressing modes (direct,register,indirect etc.) are used for the storing of bits into ports and general purpose registers, and raise flags for activating relays to run the servo motor.

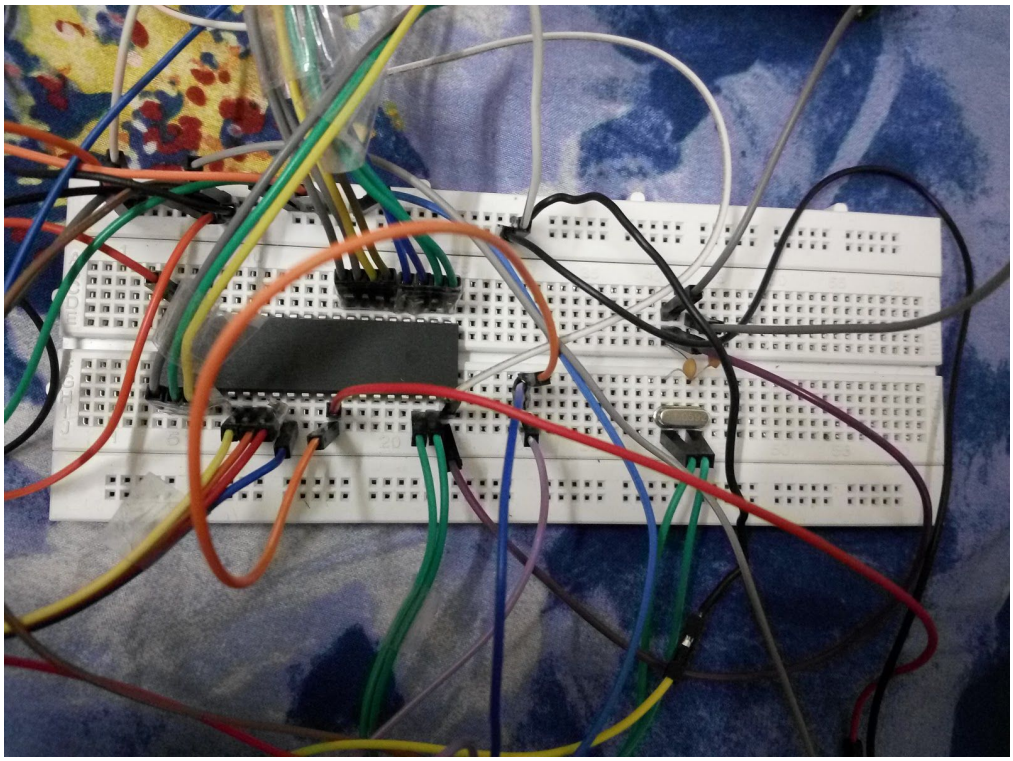
4. LCD Interfacing :

For adding visual functionality to the project, the 8051 will also be interfaced to the LCD. LCD programming covers this part of our implementation.

5. Assembly Language Use :

We programmed using assembly language which was being taught us during our course.

PHOTO:



SOURCE CODE:

```
# include <at89x51.h>
# define LCDPort P2
sbit RS=P1^0;
sbit RW=P1^1;
sbit EN=P1^2;
sbit sensor=P3^2;

void delay(int t)
    {
                int i;
                 while(t>0)
                   {
                     i=1275;
                          while(i>0) i--;
                          t--;
```

```
            }
        }
 void LCDCommand(unsigned char Value)
   {
            RS=0;
             RW=0;
             LCDPort=Value;
             EN=1;
             delay(2);
             EN=0;
             return;
       }

void LCDData(unsigned char Value)
   {
            RS=1;
             RW=0;
             LCDPort=Value;
             EN=1;
             delay(2);
             EN=0;
             return;
       }
void LCDInit()
  {
        LCDCommand(0x38);
        LCDCommand(0x06);
        LCDCommand(0x0c);
        LCDCommand(0x01);
       }
LCDPuts(char *s)
  {
         int i;
         for(i=0;s[i];i++) LCDData(s[i]);
       }
```

```
void main()
  {
        LCDInit();
        LCDPuts("   Automatic");
              LCDCommand(0xc0);
              LCDPuts("Irrigation Sys.");
              delay(1000);
        while(1)
         {
              LCDCommand(0x01);
              delay(100);
              if(sensor == 1)
              {
              LCDCommand(0xc0);
              LCDPuts("Less Humidity");
              }
              else if(sensor == 0)
              {
              LCDCommand(0xc0);
              LCDPuts("Enough Humidity");
              }
              delay(100);
         }
  }
```