Spinner Based Automation Using PIC

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Abstract- *This project will describe about Spinner Based automation using PIC. This project has systems that will combine to each other's to create a perfect combination system. This project only involves hardware and embedded software. The first circuit is an Automatic Water Sprinkle that functional to sprinkle the plants or flowers at the garden. This Automatic Water Sprinkler circuit is operating in automatically. Then second is RTC that will automatically switch ON the light at the specified time. The circuit is LM35 which will monitor the Temperature. The function is as automatic system that will operate when temperature sensor (LM35) is used. When the sensor detects heat or no heat, the Water motor will open or close automatically. This Garden will facilitate and make the users are in a comfortable. Facilities provided by the garden were user friendly and make it easier to users because it can maintain moister on the plant and it also can save the electricity.*

Keywords- *PIC18f458,MikroC, LCD, RAM.*

I. INTRODUCTION

This project is application based on the electronic circuit that applied at the garden which has functional automatically and manually. "Spinner Based Automation Using PIC" is a model or a prototype for a real project on a large scale. In this prototype, there are four systems that will combine to each other's to make a perfect combination system. This System only involved hardware part.

The first system is an Automatic Water Sprinkle Function is to sprinkle water in automatic condition. It also to ensure the plant or flower at that garden is in good condition. When the soil moister sensor probe detects the soil in dry condition, then the sprinkler will automatically ON. When the soil moister sensor probe detects the soil is in wet condition, then the sprinkler is OFF.

The second system is LDR Light Sensor is to detect the light. When the garden is in dark condition, this LDR Sensor circuit will automatically light ON the lamp. Otherwise, when the garden is light or in bright condition, the light will automatically OFF the lamp.

Then the last system is the Motor Canopy Circuit is functional either automatic system or manual system. For automatic action, it functions when the canopy detects heat, then the canopy will automatically open and it will automatically close, when there is no heat detect. For manual action, it depends on the owner or the users of the garden. This circuit is important during the rainy season that can provide shelter at „*wakaf*‟ for user to rest and hanging out.

II. PROPOSED DEVELOPMENT SYSTEM

1) *A.PIC Interfacing*

A PIC Microcontroller can be easily made to communicate with LCD by using the built in Libraries of MikroC. Interfacing between PIC and LCD can be 4-bit or 8-bit. The difference between 4-bit and 8-bit is how data are send to the LCD. In the 8-bit mode to write an 8-bit character to the LCD module, ASCII data is send through the data lines DB0- DB7 and data strobe is given through the E line.

But 4-bit mode uses only 4 data lines. In this mode the 8-bit ASCII data is divided into 2 parts which are send sequentially through data lines DB4 – DB7 with its own data strobe through the E line. The idea of 4-bit communication is to save as much pins that used to interface with LCD. The 4-bit communication is a bit slower when compared to 8-bit. The speed difference is only minimal, as LCDs are slow speed devices the tiny speed difference between these two modes is not significant. Thus the 4-bit mode data transmission is most commonly used.

B. Real Time Clock

Although keeping time can be done without an RTC, using one has benefits:

- Low power consumption (important when running from alternate power)
- Frees the main system for time-critical tasks
- Sometimes more accurate than other methods

A GPS receiver can shorten its startup time by comparing the current time, according to its RTC, with the

time at which it last had a valid signal. If it has been less than a few hours, then the previous ephemeris is still usable.

Lithium battery inside the real-time clock IC. RTCs often have an alternate source of power, so they can continue to keep time while the primary source of power is off or unavailable. This alternate source of power is normally a lithium battery in older systems, but some newer systems use a super capacitor, because they are rechargeable and can be soldered. The alternate power source can also supply power to battery backed RAM.

Most RTCs use a crystal oscillator, but some use the power line frequency. In many cases, the oscillator's frequency is 32.768 kHz. This is the same frequency used in quartz clocks and watches, and for the same reasons, namely that the frequency is exactly 2^{15} cycles per second, is a convenient rate to use with simple binary counter circuits

LCD intefacing---.A PIC Microcontroller can be easily made to communicate with LCD by using the built in Libraries of MikroC. Interfacing between PIC and LCD can be 4-bit or 8-bit. The difference between 4-bit and 8-bit is how data are send to the LCD. In the 8-bit mode to write an 8-bit character to the LCD module, ASCII data is send through the data lines DB0- DB7 and data strobe is given through the E line.
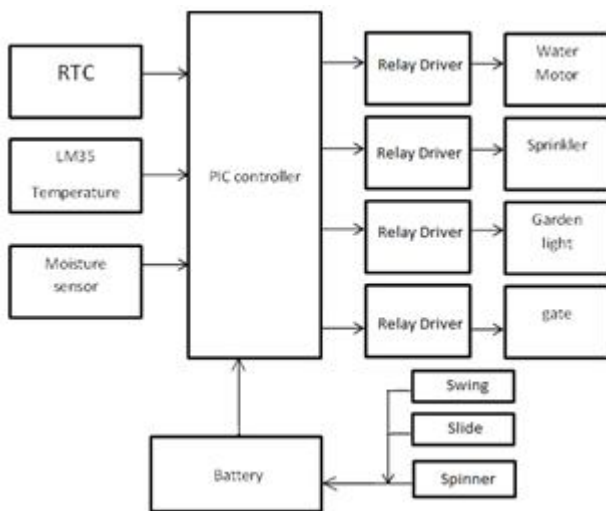

Fig 1. Block Diagram

This project will describe about spinner based using automation pic. This project has four systems that will combine to each other's to create a perfect combination system. This project only involves hardware & software. There are four circuits that are automatic functional.

These circuits are:-

1. Controller circuit.
2. Sensor's circuit.
3. Electricity generation.
4. O/P circuit.

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This circuits are:-

S   Controller circuit.
S   Sensor's circuit.
S   Electricity generation.
S   O/P circuit.

Electricity Generation

- Roller-skate, Rounder, See-saw.
- Foot-step electricity generation.
- Wind mill

Hard ware Requirement:-

n   Microcontroller PICXXX
n   DS1307
n   LM35
n   Battery
n   Moisture sensor
n   Motor
n   Transformer (230v input/9v output)
n   Diodes , Transistors , Resistors, crystal 12Mhz
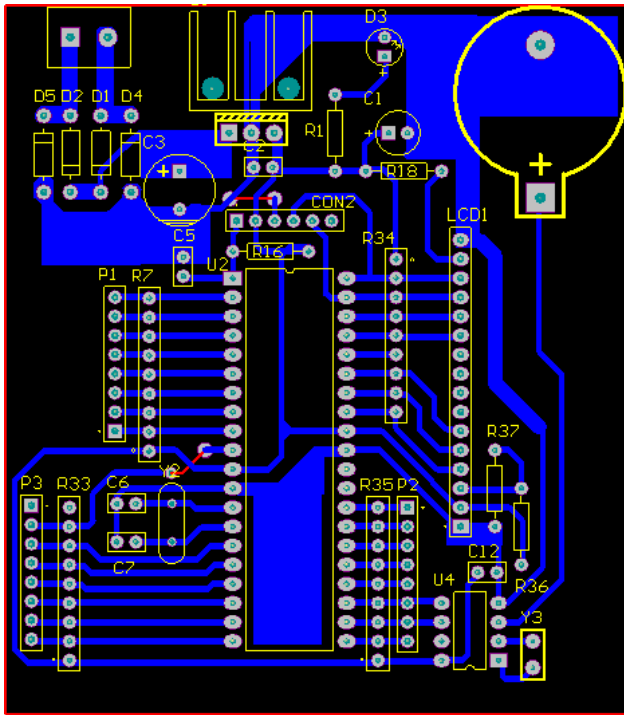PCB Board.

Fig 2. PCB Layout

III. SIMULATION AND RESULTS

While designing a 5V Power Supply in Proteus, we will be using Voltage Regulator IC, which is commonly known as 7805. This voltage regulator is used to regulate or change the voltage level of supply voltage. As we all know, most of the batteries available in market are of 12 volts.
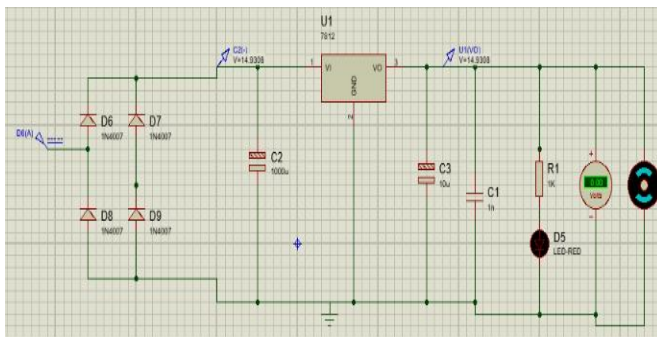

Fig 3. Simulation of DC Power Supply

It shows input given as binary to port P1. Port 0 is interfaced to LCD display by giving input as 0110 PIC18f458 process it and shows the 6th key has been pressed and vice versa. Hence it shows the binary input and its respective output on lcd for different inputs as per frequency it shows output on lcd.
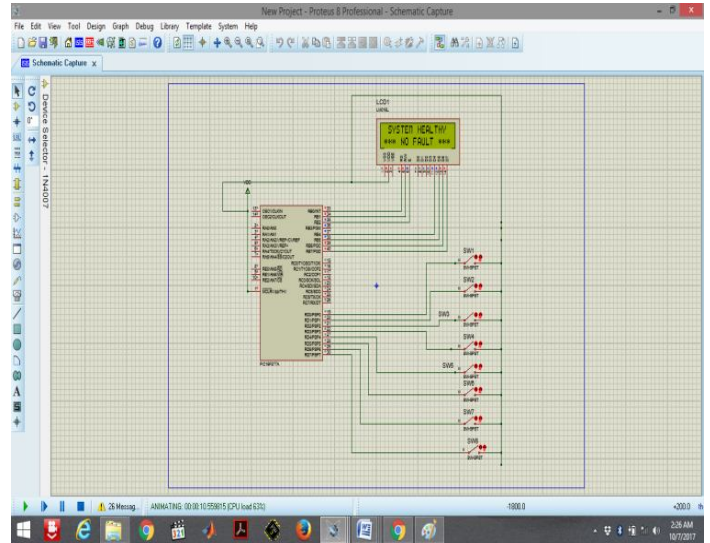

Fig 4. Simulation when switch is closed system is get unlocked

IV. APPLICATIONS

1. This small scale project can be implemented in any public garden with minimum cost and resources.
2. This helps in proper utilization of the available resources and helps in avoiding wastage of electricity and water.

V. CONCLUSION

This project mainly aims at the automation of the public garden to avoid wastage of resources.This can be expanded in the sense of security. Using metal detectors and CCTV cameras security of the garden can be enhanced.Also by using GSM technology further control of water supply and lights using mobile can be achieved

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