

Solar Energy Based Warehouse Control System

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ABSTRACT: Solar Energy Based Warehouse Control System Deals With The Warehouse Problems And Calamities With The Help Of Various Sensors In A Warehouse System. It Has Fire Sensor, Humidity Sensor, Temperature Sensor, Rain Sensor, Ldr To Prevent Huge Losses Due To Certain Problems. Password Security Is Used To Avoid Unauthorized Access .The Password System Is Designed So As To Have A New Password At Every Instant Of Time. The Interfacing Is Done With 8051 Microcontroller.

Keywords - LCD (Liquid Crystal Display), LDR (Light Dependent Resistor), GSM (Global System for Mobiles), various sensors like rain, fire and humidity sensors.

I. INTRODUCTION

In a tough economy, the universal battle cry is, "Do more with less!" There is a need to look for new ways to squeeze a few more dollars, or a few more hours, from our operations while also delighting customers with ever-better service. In many cases, one should try to achieve those goals while saving energy and reducing our environmental impact. Warehouse operators can employ many excellent strategies to boost efficiency: warehouse management systems, wireless communications systems, materials handling automation, With the emergence of new calamities and high security issues automation of systems have acquired a major place in today's industry. An automation system is made which can be used in the fields, ware houses, kitchens and industries etc .It can be used to detect various atmospheric and other conditions e.g. Rain, Light, Fire, Humidity. By implementing energy and cost saving systems, companies within the warehousing distribution sector are better preparing themselves for the future. Green network designs have optimized transport in regard to CO2 emissions and the related cost, and the analysis of a typical supply chain revealed that optimizing the network for cost could bring about 7% in cost savings coupled with a 25% reduction of CO2 emissions.

Warehouse Automation:

First, the use of various sensors enables simplicity of use of project and makes it possible for a common layman to use it to prevent huge losses of life and property in case of fire, rain etc. Secondly, it provides multi-functionality at a reasonable cost which can further be extended.

Maintaining the Integrity of the Specifications:

Rain sensor is used which detects the rain, and LDR is used to detect the light intensity of sun light at night .The LDR system automatically switches on the street lights depending on the intensity of the light. Smoke sensor is used to detect the leakage of gases in industries. Fire sensors are used to detect the fire in building.

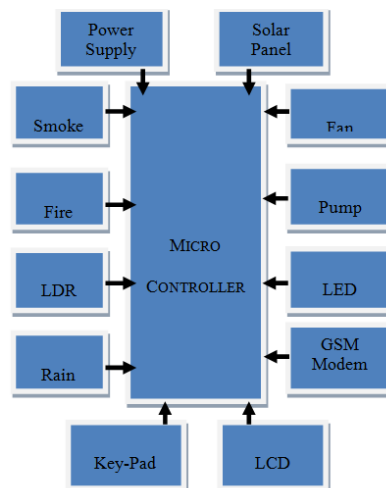


Fig. 1: Block Diagram of Warehouse Control System

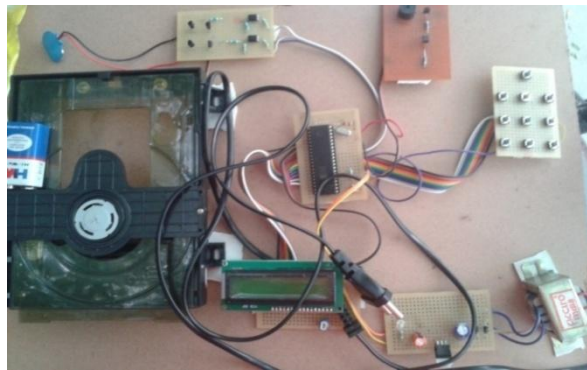


Fig.2: Basic implementation



Fig.3: Solar energy based warehouse control system

II. PROGRAM MODULE

Program module for LCD Display:

rs bit p2.5	mov c3,#00	
rw bit p2.4	mov hour,#00	
e bit p2.3	mov mints,#00	
fl bit p0.7	mov seconds,#00	
lcdequ p0		
	mov a,#38h	;2*16 matrix
c1equ 31h	acall command	
c2equ 32h	mov a,#38h	;2*16 matrix
c3equ 33h	acall command	
hourequ 34h	mov a,#38h	;2*16 matrix
mintsequ 35h	acall command	
secondsequ 36h	mov a,#01h	;clear display screen
org 00h	acall command	
start: mov lcd,#00h	mov a,#0ch	;display on cursor off
mov c1,#00	acall command	
mov c2,#00	mov a,#06h	;display on cursor off

```

acall command
mov a,#80h
acall command
movdptr,#tabelhh
acall display
mov a,#0c0h
acall command
mov dptr,#table4
acall display

display:
clr a
movc a,@a+dptr
acall write
incdptr
jmp display
next:
ret
write:
acalldelay_lcd
movlcd,a
setbrs
clrrw
clr e
ret
command:
acalldelay_lcd
movlcd,a
clrrs ; instruction
clrrw ; to lcd
setb e ;necessary
clr e
ret
delay_lcd:
mov r7,#5
jjk: mov r6,#200
djnz r7,jjk
ret
delay1: acall delay
acall delay
acall delay
acall delay
acall delay
acall delay
acall delay
acall delay
ret
delay: mov r7,#0ffh
aa14:  mov r6,#0ffh
aa15:  djnz r6,aa14
djnz r7,aa15

```

```

ret
tabelhh: db 'time ',0
table4: db 'password ',0
valid: db 'correct ',0
invalid: db 'incorrect',0
end

```

Keypad:- A linear Keypad of 10 buttons is used as the input to microcontroller. A simple push to ON buttons is used as keys. When a key is pressed then specific pin of microcontroller goes low. Microcontroller continuously reads the status of each key. It is used to enter the password.

Program module for Password authentication:

```

hours_loop:  mov a,#87h
acall command
mov a, hour
acallhtd
acall out1
mov a,#":"
acall write
mints_loop:  mov a,#8ah
acall command
mov a, mints
acallhtd
acall out1
mov a,#":"
acall write
mov a, mints
cjne a,#60,seconds_loop
inc hour
mov mints,#00h
jmphours_loop

seconds_loop: mov a,#8dh
acall command
mov a, seconds
acallhtd
acall out1
acallone_sec_delay
inc seconds
mov a, seconds
cjne a,#60,seconds_loop
mov seconds,#00h
inc mints
jmpmints_loop
one_sec_delay:
mov r7,#08fh
aa:mov r6,#0ffh
bb: mov r5,#06h
cc:  jnb p1.0,password

```

```
        djnz r5,cc
        djnz r6,bb
        djnz r7,aa
        ret
password:jnb p1.0,$
        mova,hour
        acallhtd
        mov a,c3
        mov 40h,a
        mov a,c2
        mov 41h,a

        mova,mints
        acallhtd
        mov a,c3
        mov 42h,a
        mov a,c2
        mov 43h,a
        mova,seconds
        acallhtd
        mov a,c3
        mov 44h,a
        mov a,c2
        mov 45h,a
        mov a,#00h

        mov 46h,a      ;result of time
        enterpassword:
        mov a,#0cah
        acall command
        mov r0,#50h ; for enter a number at
        location 50h
        mov r3,#03 ;as three digit password
        harjeev:
        jnb p1.0,aa0
        jnb p1.1,aa1
        jnb p1.2,aa2
        jnb p1.3,aa3
        jnb p1.4,aa4
        jnb p1.5,aa5
        jnb p1.6,aa6
        jnb p1.7,aa7
        jnb p3.0,aa8
        jnb p3.1,aa9
        aa0:
        mov @r0,#0
        mov a,#"0"
        acall write
        acallthreedigit_check

        threedigit_check:

        inc r0
        djnz r3,harjeev
        jmpcheckpassword
        ret
        aa1:
        mov @r0,#1
        mov a,#"1"
        acall write
        acallthreedigit_check
        aa2:
        mov @r0,#2
        mov a,#"2"
        acall write
        acallthreedigit_check
        aa3:
        mov @r0,#3
        mov a,#"3"
        acall write
        acallthreedigit_check
        aa4:
        mov @r0,#4
        mov a,#"4"
        acall write
        acallthreedigit_check
        aa5:
        mov @r0,#5
        mov a,#"5"
        acall write
        acallthreedigit_check
        aa6:
        mov @r0,#6
        mov a,#"6"
        acall write
        acallthreedigit_check
        aa7:
        mov @r0,#7
        mov a,#"7"
        acall write
        acallthreedigit_check
        aa8:
        mov @r0,#8
        mov a,#"8"
        acall write
        acallthreedigit_check
        aa9:
        mov @r0,#9
        mov a,#"9"
        acall write
        acallthreedigit_check
        checkpassword: clr a
        add a,50h
```

```
add a,51h
add a,52h
cjne a,46h,invalid_loop
mov a,#0c0h ;;valid routine
acall command
movdptr,#valid
acall display
acall delay1
mov a,#0c0h
acall command
mov dptr,#table4
acall display
jmpseconds_loop
invalid_loop:  mov a,#0c0h
acall command
movdptr,#invalid
acall display
acall delay1
mov a,#0c0h
acall command
mov dptr,#table4
acall display
jmpseconds_loop
invalid_loop:  mov a,#0c0h
acall command
movdptr,#invalid
acall display
acall delay1
mov a,#0c0h
acall command
mov b,#10
divab
mov c2,b
mov c3,a
ret
out1:
mov a,c3
orl a,#30h
acall write
mov a,c2
orl a,#30h
acall write
ret
```

III. CONCLUSION

Solar Energy Based Warehouse Control System Is a Complete System Which Prevents the Huge loss of materials, grains, etc. stored in warehouses. It prevents damages due to fire, smoke, rain etc with automatic lightening as the darkness prevails. It also provides a secure system with a password access that change at every instant of time. Such systems provide cost efficient security systems. Solar panels are used to store solar energy which can be used to provide uninterrupted power supply to password security system. Invalid password is followed by a buzzer to indicate that unauthorized person is trying to enter into the system and controls thefts etc. Rain, Smoke, Fire etc are followed by a message to the owner that some calamity is going on which needs immediate solution to prevent the damage

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