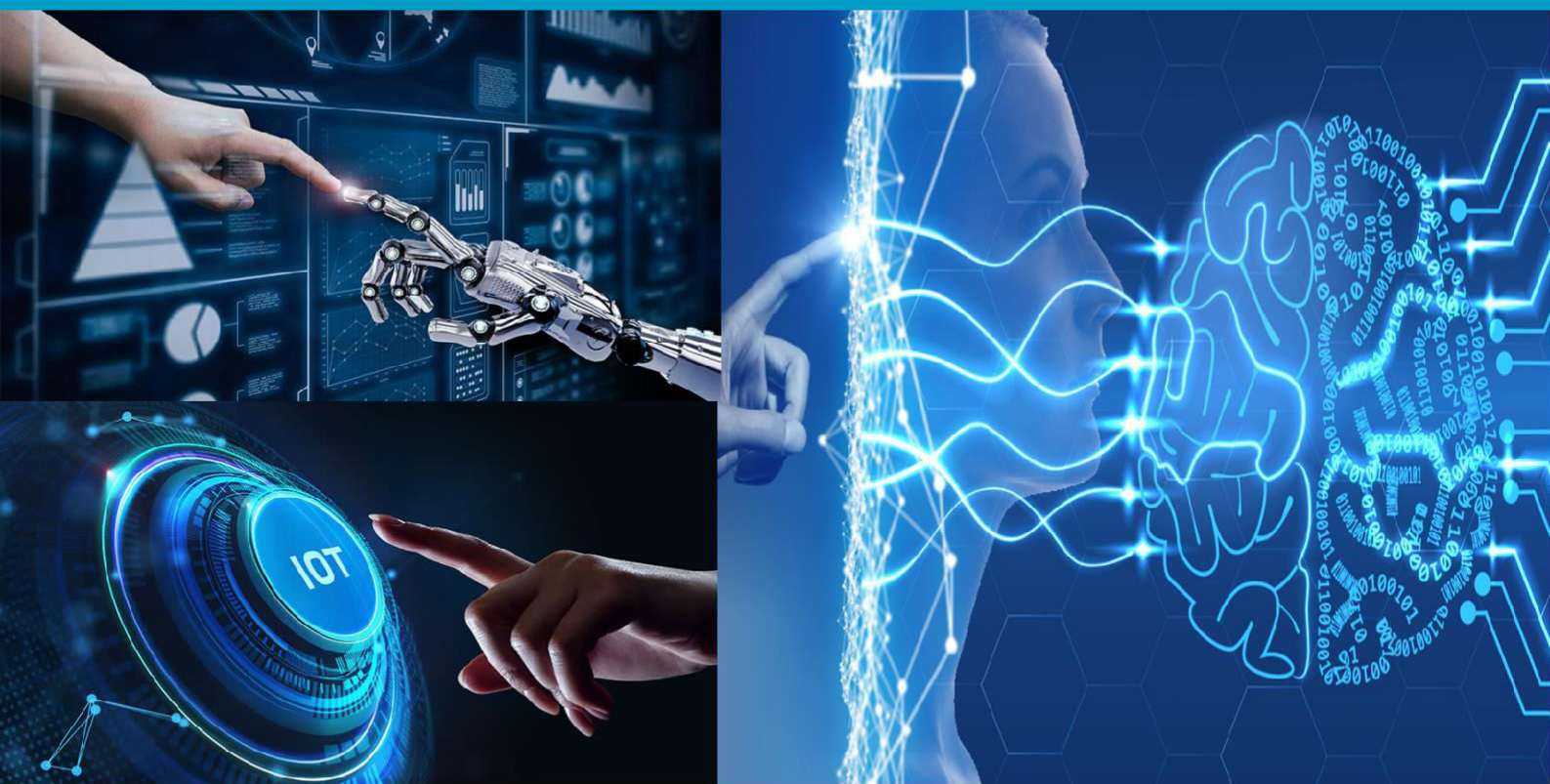




INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY RESEARCH

IN SCIENCE, ENGINEERING, TECHNOLOGY AND MANAGEMENT

Volume 11, Issue 5, May 2024

ISSN

INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 7.802



Fan And AC Time Controller

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ABSTRACT: Automation is a demand in this era of information and communication technology where a smart control system is used to reduce or replace human operators in the industry, offices or homes to produce some goods or services. Auto Scheduler system is the subset of automation system that allows us to control household appliances like light, door, fan, air-conditioner, etc., in smart way. Auto Scheduler system provides security and emergency systems to be activated when necessary. It helps handicapped and old aged people which will enable them to control home appliances and alert them in critical situations. There are different types of auto scheduler systems in the market. They are generally proprietary and closed, expensive and not very customizable by the end user. To overcome this limitation, there are scopes of research in this area. In this project work, a simple automatic scheduler system has been chosen to implement. This project is aimed at developing a low-cost auto scheduler system to control electrical devices to be turned on and off; As an example, in a room or lab environment an auto schedule system will run according to the definite time. This system will be connected with two air condition or two electric devices like AC-1 & AC-2 or Device-1 or Device-2. When the system is powered on, AC-1 will be turned on and AC-2 will be turned off. The proposed system is not fully implemented. To emulate the system, a prototype hardware has been implemented where a microcontroller based auto scheduling program is controlling the on-off switching of two electric bulbs in a predefined time scheduling manner.

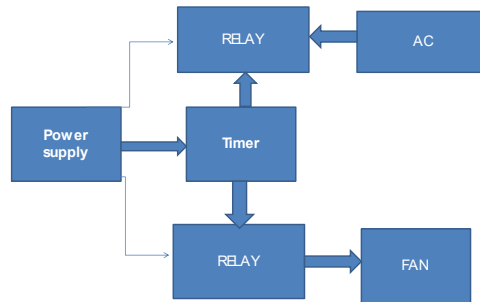
KEYWORDS: Battery, PV, DC, Grid.

I. INTRODUCTION

The application of the device control in real life is very common nowadays. There are many applications that have been developed by using device control in electronic field such as home automation, industrial automation, etc. Auto Scheduler is the use of control systems to reduce the need for human work in the production of goods and services. In the scope of industrialization, scheduler is a step beyond mechanization. Whereas mechanization provided human operators with machinery to assist them with the muscular requirements of work, scheduler greatly decreases the need for human sensory and mental requirements as well. Auto scheduler plays an increasingly important role in the world economy and in daily experience. Automatic systems are being preferred over manual system. Auto scheduler is the control of any or all electrical devices in our home, office or lab whether we are there or away [2]. Auto schedule is one of the most exciting developments in technology for the home, office, or lab that has come along in decades. There are hundreds of products available today that allow us control over the devices automatically. Automatic scheduler is the residential, industrial, or lab environmental extension of "building schedule". Automatic scheduler may include centralized control of air-conditioning (AC), and fan other systems, to provide improved convenience, comfort, time schedule, energy efficiency, and security. Disabled can provide increased quality of life for persons who might otherwise require caregivers or institutional care. Through this project we have tried to show automatic schedule of air condition, fan, bulb or electronic devices as a result of which time is saved to some extent. Moreover, the GSM based auto scheduler saves time and labor.

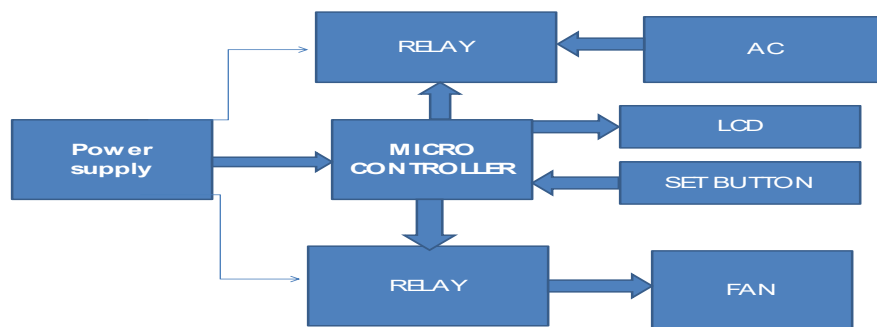
II. EXISTING SYSTEM

Most process control was on-off. Operators ATMEGA 8ally monitored charts drawn by recorders that plotted data from instruments. To make corrections, operator manually opened or closed valves or turned switches on or off. Control rooms also used color coded lights to send signals to workers in the plant to manually make certain changes. Controllers, which were able to make calculated changes in response to deviations from a set point rather than on-off control, began being introduced the 1930s. Controllers allowed manufacturing to continue showing productivity gains to offset the declining influence of factory electrification.

**Figure.1. Existing Block Diagram**

III.PROPOSED METHOD

The person who wants to on/off AC and fan device kept at the controller side to set the time and, once the time is set .ON time and OFF time of AC and FAN for a corresponding device it. A prototype of fan and refrigerator was built in this research using a microcontroller, LCD and RTC are used to control temperature for control the devices and detect the user for automatic on/off respectively,

**Figure.2. Proposed Block Diagram**

WORKING AND FLOW CHART

This system's working principle is very simple. After turning on the system, the system will start its operation by turning ON device-1 and turning OFF device-2, when device-1 is ON and device-2 is OFF. Then, a confirmation SMS will be sent to a programmed number. (When predefined time will change after certain period then the device-1 will be turned OFF and device-2 will be turned ON and again a confirmation SMS will be send to that programmed number). And the system will work for regular operation.

LCD

A liquid crystal display (LCD) is a thin, flat display device made up of any number of color or monochrome pixels arrayed in front of a light source or reflector. Each pixel consists of a column of liquid crystal molecules suspended between two transparent electrodes, and two polarizing filters, the axes of polarity of which are perpendicular to each other. Without the liquid crystals between them, light passing through one would be blocked by the other. The liquid crystal twists the polarization of light entering one filter to allow it to pass through the other.

ATMEGA8 MICROCONTROLLER

The ATmega8 is a low-power CMOS 8-bit microcontroller based on the AVR RISC architecture. By executing solar powerful instructions in a single clock cycle, the ATmega16 achieves throughputs approaching 1 MIPS perMHz, allowing the system designed to optimize solar power consumption versus processing speed. The AVR core combines a rich instruction set with 32 general-purpose working registers. All the 32 registers are directly connected to the Arithmetic Logic Unit (ALU), allowing two independent registers to be accessed in one single instruction executed in one clock cycle. The resulting architecture is more code efficient while achieving throughputs up to ten times faster than conventional CISC microcontrollers.

The device is manufactured using Atmel's high-density non-volatile memory technology. The Flash Program memory can be reprogrammed In-System through an SPI serial interface, by a conventional non-volatile memory programmer, or by an On-chip boot program running on the AVR core. The boot program can use any interface to download the application program in the Application Flash memory. Software in the Boot Flash Section will continue to run while the Application Flash Section is updated, providing true Read-While-Write operation. By combining an 8-bit RISC CPU with In-System Self-Programmable Flash on a monolithic chip, the Atmel ATmega8 is a solar powerful microcontroller that provides a highly flexible and cost-effective solution to many embedded control applications. The ATmega8 AVR is supported with a full suite of program and system development tools, including C compilers, macro assemblers, program debugger/simulators, In-Circuit Emulators, and evaluation kits.

RELAY

A relay is an electrically operated switch. Many relays use an electromagnet to operate a switching mechanism mechanically, but other operating principles are also used. Relays are used where it is necessary to control a circuit by a low-power signal (with complete electrical isolation between control and controlled circuits), or where several circuits must be controlled by one signal like microcontroller. The first relays were used in long distance telegraph circuits, repeating the signal coming in from one circuit and re-transmitting it to another. Relays were used extensively in telephone exchanges and early computers to perform logical operations.



Figure.3.Hardware Model

IV.CONCLUSION

At first, the device was designed with ATMEGA 8 microcontroller. The firmware was written in MPLAB and the simulation was done with Proteus. Though the simulation of the circuit was perfectly fine, the implemented one could not deliver such good performance. So the design of the circuit and also different modules of the design were changed to improve the performance. But still the performance could not be improved. Sometimes it gave correct response while sometimes it did not. Hence, the response was not stable. Afterwards, to solve the problem a different approach was taken. The circuit was redesigned with an Arduino board with Atmel microprocessor, a relay and GSM module. The performance of the new setup increased drastically. As Arduino is an open-source platform, the implementation is easy and cheap and related help is available in the internet. After some further analysis of previous failure it revealed that it was due to faulty components.

Finally, it can be concluded that this device is very low cost compared to the devices available in the market. It has been designed very carefully and after observing its working procedure, it can be said that it is very efficient and reliable device. It gives very quick responsiveness by which the connected devices are turned on/off immediately. It can be used in many places such as research lab where fixed temperature is the main concern and to save time & labor. That

means in a research lab where a fixed temperature is controlled by two air condition (AC), but it needs to change the AC's after certain time or twelve hour after twelve hour. So someone have to go and change the schedule daily even in the holiday. By using this device the AC's or devices are changed by its definite time and a confirmation SMS will be sent to a programmed mobile number regarding "Device-1 is ON and Device-2 is OFF" or "Device-1 is OFF and Device-2 is ON" automatically.

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