Application and Technological Description of Microprocessors in Technological Measuring Devices

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Abstract: The work is aimed at promoting a microprocessor-based intelligent system for household appliances. System design came first household appliances were analyzed considering the voltage and amperage readings, then analyzed and using them, the physical design of a simulated one-bedroom apartment was conceptualized and tested to fulfill the research objective. Many components have been tried and tested in the design, but the component chosen relay, multimeter, voltmeter connectors, allowed work on the following component. remote controls, diodes, etc. These were used to achieve the goal. Intelligent in simulating the proposed microprocessor system voltage level adjustments are made and it is recommended to create a mobile application to control them design to ensure convenient and continuous signal transmission and reception from the intelligent system. From now on and voltage analysis of each household appliance, analysis current rate form ,50A and voltage level 218.4V, which corresponds to the standard voltage rates of 220/230/240, respectively.

Keywords: microprocessor, timer, relay and distribution board, real-time processing, intelligent systems, automation.

INTRODUCTION

A microprocessor is usually a silicon chip on which millions of transistors and other processing components are mounted. instructions per second, integrated with memory chips and is special purpose and software. A programmable microchip with a microprocessor that uses digital data as input and produces results once. processes input according to knowledge or instructions stored in its memory. A microprocessor uses sequential gates because they have an internal memory element and work on numbers and symbols represented in the binary number system. The plan is based on a microprocessor-based intelligent system module used for long-distance communication. the modern home can be controlled using microprocessor chips that act as remote controls for all household appliances. A microprocessor-based smart device module uses battery-powered computer-based microprocessor chips, making the smart home system more secure and free from internet hacking. A microprocessor chip module can be used In many ways, it can be connected to many devices, such as a car, to stop and interface to a smoke detector sensors, temperature sensor, fire sensor, etc. A modern house can also be made using all these appliances it is possible to completely reduce human activity by becoming smarter. Microprocessor can also be used in industrial areas and agricultural areas. This is done only by interconnecting the necessary components with a microprocessor and a smart base system. It has a smart home concept became the subject of experimentation and improvement by researchers. With the development of technology over time, electronic devices and the internet have become more popular and affordable, so has the concept of home automation and people's expectations has changed dramatically from the smart home. The modern home is a complex mix of ubiquitous computers devices and wireless sensor/actor networks. All these are modern user preferences, complex electronic and unpredictable user actions have introduced new security challenges to the home automation front. The idea of home automation security has evolved over time with sensors and actuators built into the home to detect, warn and prevent attacks. A smart home is also seen as a

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residential home of building automation. It was attended at first control and automation of systems that provide human comfort, such as lighting, heating, ventilation, air conditioning and protection. Recently, it has covered many home appliances that use Wi-Fi for remote control. Technological innovation has increased the prevalence of smart home systems, which has led to improved living standards condition Commercial home automation systems are still unaffordable for a large portion of the middle- and lower-income population class families. However, the introduction of low-cost microcontrollers such as the Arduino has made implementation possible low-cost smart home systems that include many of the features commercially available In addition, incorporating intelligence into the home environment can help improve quality of life. Elderly and disabled people who may have adventures need caregivers or institutional care. There was tension growth in home automation in recent years due to the development and affordability of smart phones and tablets which enables broadband connectivity. Research and implementation of the home with the Internet of things automation is becoming more popular than ever. Further research revealed that there are no Bluetooth-based phones available Internet control is connected to a Bluetooth sub-controller, after which it is controlled by a smartphone using the built-in Bluetooth connection. Due to the limited operating range (maximum 80 m), the system cannot do this can cope with mobility and only try to ensure network interoperability and remote access to control devices and home appliance control devices and appliances in a personal computer-based home control system using a computer-based web server manages connected devices.

Materials and method

This research method involves simulating a microprocessor-based intelligent system for the home devices. Simulation is the imitation of the operation of a real process or system. Before going live, testing of the developed technique is required. Often, testing and evaluating proposed protocols or theories It cannot be done in practice through real experiments because it is more complicated, time-consuming and even expensive. So, until To solve this problem, simulators and testbeds are effective tools for testing and analyzing performance proposed protocols and algorithms. Also, an emulation of the performance of a real live system or process called simulation. Incorporating a construction plan into the simulation of a microprocessor-based system includes the use of an infrared sensor and remote switching between mains relay and automatic switching between the power supply to operate the on and off buttons. Household items: includes castings, electrical outlets, distribution board. Analysis was performed using a block diagram.
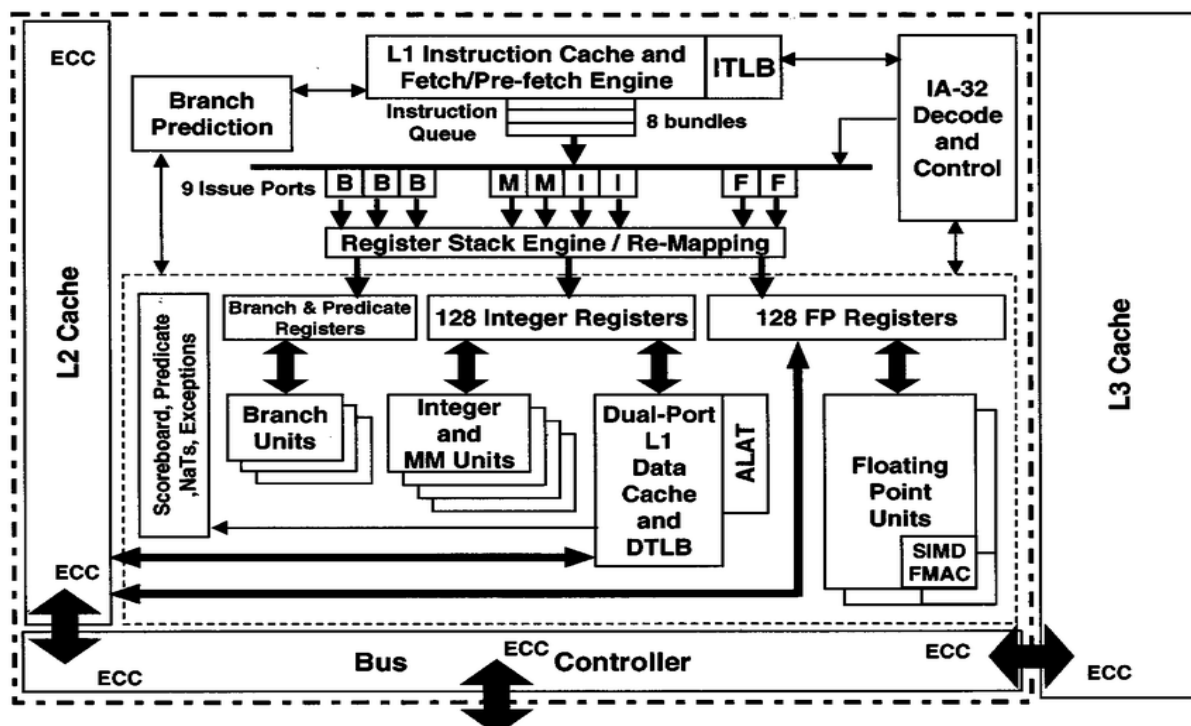

Picture1. System block diagram for a microprocessor

Regulated DC Power Supply: This field tells you what the voltage level is at each component, rating weather. If a component is 12 volts or 24 volts, they are now regulated to use 12 volts or 24 volts from the same rating circuit. In A 24 volt rating means that 12 volts are connected in series, if it is 12 volts, 12 volts will be transmitted. from input and output. The RDC supply unit is connected to the system control unit microcontroller, this microcontroller regulates the power to the system, if it is 12 volts, the voltage level will be maintain 12 volt power on all components (equipment). System Communication Interface: An interface with each sending and receiving microcontroller that is the receiver The signal on this interface, the receiver only receives the signal from the microcontroller, but the microcontroller is checked twice what is acceptance. The transmitter connects directly to the receiver, all of which use wireless sensors for double-checking each other. Load status indicator: each electrical device uses different speed, this field analyzes the load rhythm, but shows load of the component.
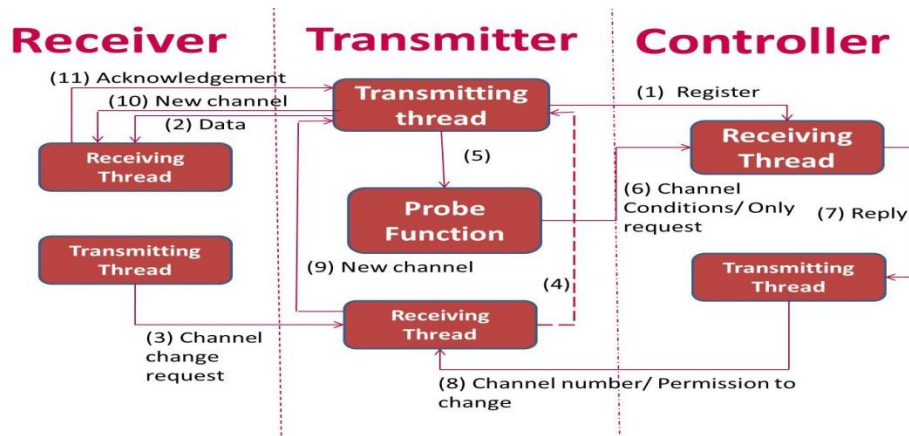
Picture 2. Flow diagram of the system transmitter

The system actually starts up when power is applied to the device that starts the system (transmitter unit) and ready to send the input, then the controller goes to the key input, what it gets is the byte and the input. bit. On startup, the key input is converted to 32 bits and asks for a transmitted word. If the word is accepted exits, it terminates the process. This indicates whether the message was sent in bits or bytes, if not. returns to Another input is a trigger to ensure that the controller input point is sent or not. If the second time nothing is sent, which means that the transmission device is not working, so we need to go back to save it. Initialization initializes the system, ready to accept input when input signals are sent in the form of bits. or byte conditional statement has been processed.if the signal is successfully sent through the transmit end, this Yes, the sender checks the word in bits or bytes after the receiver checks the other conditional statement to determine if what is sent is true or false. Returns if false, binary code if true is processed and the relay or switch turns ON, but only if there is no power failure or alarm at the sent point an inspection was also carried out to identify difficulties.
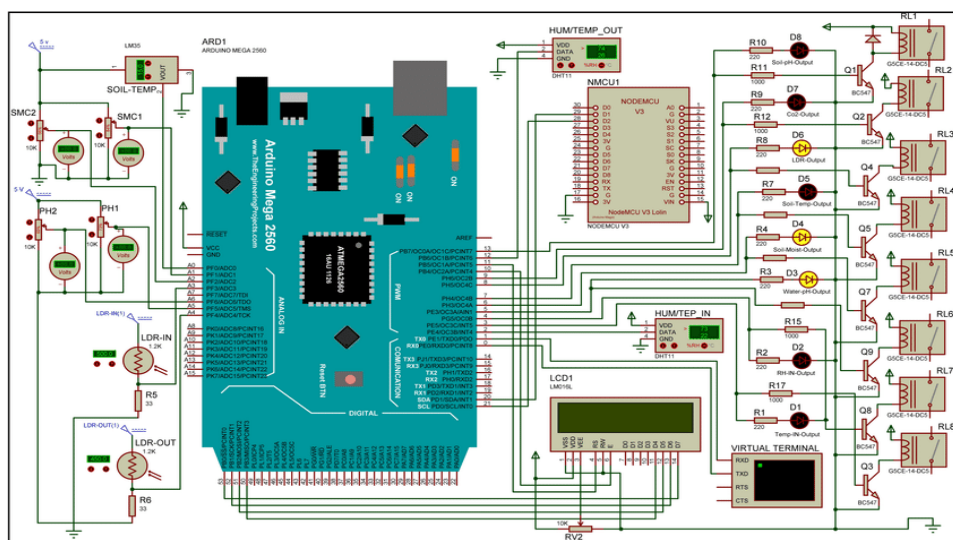
Picture 3. A schematic diagram of a microprocessor

A schematic diagram of the study is taken from the Microcircuit version of the software showing all the hardware. used in simulation of research work. The schematic design has a transmitter end and a receiver end. On The components used at the transmitter end include: transmitter unit, remote control and At the receiving end, U4 is attached to Modulo, D16, components and remote sensors. Computational capabilities have always challenged the development of artificial intelligence. Main focus on hardware platforms to manage enough resources to perform Increasing demands on AI. To date, most of the advances in microprocessors have been made to reduce the size of the transistor, but it has already deviated from the predicted performance path because thermal problems become inevitable after a certain hour limit. However, microchips are developed on a very thin layer of silicon wafer, but there are some ideas around the three-dimensional structure of microchips to improve the efficiency of microprocessors. In addition to using high efficiency, this concept raises many thermal and interconnection issues that researchers must address before it can be successfully adopted. In other words, microprocessors dominate current trends in architecture for another ten years. At the same time, we cannot deny it the possibility of new techniques such as quantum computing and molecular computing it is necessary to change the design of future microchips. Microprocessors work behind the scenes for storage passengers are safe and on time. Household vehicles - cars, trucks, RVs- integrate microprocessors to communicate important information throughout the vehicle. For example, provides information using navigation systems microprocessors and global positioning system (GPS) technology. Also like public transport systems flights and trains rely on critical microprocessors information. In public transport, fare cards or smart cards have processors for calculating and deducting fares retain information about the relevant quantity and how much funding remains. The aviation system relies on many things microprocessors from calculating weather conditions to controlling the complex functions of the aircraft.

Conclusion

A smart home device with a microprocessor has been developed. The prototype of the automatic smart switch worked to specification and very satisfactory. 3D integration techniques provide significant benefits in terms of area, wire length, and aspect ratio power consumption but also increases power density. Here we evaluated the architecture Effect of direct interlayer cooling method for 3D (temperature, leakage and reliability) integrated processor, where dielectric coolant flows between individual dies. Liquid the cooling scheme significantly reduces the temperature on the chip below 350K, which eliminates thermal emergency The microprocessor-based intelligent trigger system is huge an advantage in every field where uninterrupted power is required. reliability of power supply from always When utilities are low and continuity of supply is needed, the smart system switches on. alternative source from main supply and vice versa. This study was mainly developed in a low voltage system using remote triggers to activate sources in residential buildings. This is very desirable for future smart home projects. Microprocessor control of the system can provide control impractical strategies to use electromechanical controls or target electronics controls. O'telbayev Azizbek, a student of the Nukus Mining Institute at the Navoi State University of Mining and Technology, gave several examples of the processes of their application in mining and presented to international journals the methods of automation of mining technologies through microprocessors and the technologies in mining at the same time. proved with several examples that it can be used in several technological processes. The use of modern technologies plays an important role in the development economy of the mine. It is necessary to pay attention to the parameters of technologies when automating processes in mining enterprises. Do not set the load beyond the limits of the technology, only then the technology will work for a long time without problems. In this article, I will inform you that if we install a microprocessor (automatic mode memory) in the technology in the mining enterprises, we will prevent the overloading of the technology. This ensures the operation of the enterprise and the safety of workers.

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