IoT Based Home Automation System

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Abstract:

In today's era everything from farming to automobile manufacturing is automated, Automation is necessary to increase efficiency and reduce the time spent for repetitive tasks. IoT (Internet Of Things) is a growing technology which enables technologies to be linked and controlled from anywhere in the world. In this paper we describe the working of an IOT based home automation system which aims at advancing ease of living using already available technology.

Keywords: IoT (Internet Of Things), Home Automation System.

I. Introduction

One of the leading reasons for electricity wastage is people forgetting to turn OFF household lighting and appliances. The Bureau of Energy Efficiency, based on Central Electricity Authority statistics, has estimated gross energy consumption for public lighting to be 6,131 million kWh in India for the years 2007-2008. The use of automation technology reduces the amount of energy wasted significantly. This technology gives the freedom to fit a lighting system which turns ON and OFF automatically at a pre-set time, Capability to control an appliance remotely and remove the need for a physical switching device.

II. Concept Diagram

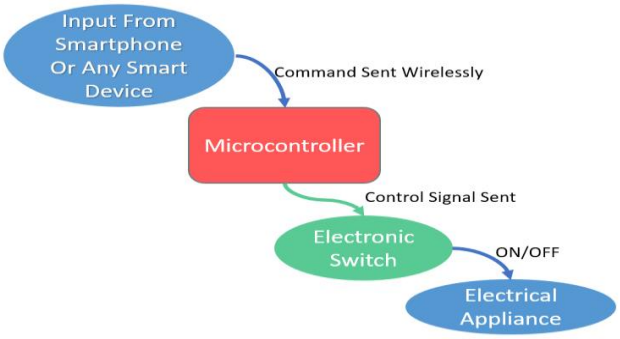

Figure 1, Summarizes the conceptual working of the model.

III. Technical Details

The circuit consists of ESP32 as the main microcontroller and IoT device, Relays and MOSFETs as control devices and Mains-AC as the power source. A database with the current state (ON/OFF) of the appliances is hosted online, the control outputs given from anywhere in the world are updated onto the database. The control board accesses the database through household LAN or Wi-Fi connection and makes the device turn ON or OFF based on the input given. The user is provided with a GUI (Graphical User Interface) through which the control inputs are given.

IV. Problem And Solution Statement

Through this device we are aiming to solve the problem of energy wastage and inability to control appliances remotely.

The GUI will enable the monitoring of the energy used for specific appliances over a period of time which will give the user an idea regarding the energy consumption of every specific electrical appliance. The user can automate electrical appliances to turn ON/OFF at pre-set time intervals (E.g.: Outdoor Night Lights can be set to Turn ON at 6pm and OFF at 6am Automatically). In case the user needs to turn ON/OFF an appliance it can be done remotely be it from the comfort of an office or anywhere.

V. Conclusion

Through this Mini-project we aim to use technology for the amelioration of energy management and ease of living.