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IOT ENABLED SMART REFRIGERATOR

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Abstract — *The aim of the project work is to protect the refrigerator getting damaged due to the overload, over temperature and input high voltage. Normally refrigerators are burning because of these three reasons and by incorporating this type of monitoring and control circuits, life of them can be increased. We can monitor the temperature of the refrigerator through the mobile phone. By keeping some sensors in refrigerator we can monitor voltage and current consumption. We can even predict the faults by analyzing the monitored parameter values that are displayed in the digital display.*

Keywords- *arduinoUno board, Wi-Fi module(HLK RM04),current and voltage Transformers,LM-35 Sensor,relays.*

I. INTRODUCTION

We are living in an age where tasks and systems are fusing together with the power of IOT to have a more efficient system of working and to execute jobs quickly! With all the power at our finger tips this is what we have come up with. The Internet of Things (IoT) shall be able to incorporate transparently and seamlessly a large number of different systems, while providing data for millions of people to use and capitalize. Building a general architecture for the IoT is hence a very complex task, mainly because of the extremely large variety of devices, link layer technologies, and services that may be involved in such a system.

The Internet of Things (IoT) refers to the set of devices and systems that interconnect real world sensors and actuators to the Internet. This exposition proposes an e-monitoring system that putforths an embedded system and WiFi based software assimilated with IoT technology. Using the anticipated system, monitoring of the refrigerator parameters status could be monitored effectively. This design designates a technique in which the refrigerator performance could be checked at regular intervals which would prevent the undesirable damage of the product. In addition to this it also has facilitation so intimate the information about the abnormality through WiFi. For this individual sensing circuits that could damage the performance of the refrigerator are designed and monitored.

II. LITERATURE SURVEY

In 1999, Electolux screenfridge, a connected refrigerator design to allow users to order groceries overt the internet;but the product has yet to ship was unveiled. In 2000,whirlpool/cisco refrigerator which allow a users to watch a celebrity chef on the web pad was launched. . In the year 2005, further more advancements are made . There have been so many other attempts at making internet refrigerator a success. In 2009 samsung offered a fridge with a detachable LCD screen with a message boardd for “smart food management”. In 2010 LG suggested a fridge with internet access that enabled useres stay tuned to the internet. In 2011 Samsung again offered a new internet fridge, the futuristic RF4289 with an 8in touch screen .

In the proposed model , we are not using a real fridge and operating it automatically rather operating it manually.In this project we place temperature,voltage and current transformers,arduino,wifi module,buzzer,and demo fridge model.We can monitor the temperature of the refrigerator through the mobile phone. By keeping some sensors in refrigerator we can monitor voltage and current consumption. We can even predict the faults by analyzing the monitored parameter values that are displayed in the digital display.

III. EXISTING AND PROPOSED SYSTEMS

3.1 EXISTING SYSTEM

The existing system of a refrigrators chanalize working of refridgerator keeping the adatability criteria in mind. These systems give atmost importance to automatic temperature control and maxium useage life span.

DISADVANTAGES

- Not efficient.
- Time consuming for any problems to be solved
- It is not flexible.
- Cannot detect manually in case of any burns.

3.2 PROPOSED SYSTEM AND FUNCTIONALITY

- In this proposed system, a module has been developed based on ardunio microcontroller in which it consists of in built A/D converters and also the wifi module in this project.
- Here, basically we will be placing the three sensors that is voltage(PT) and current(CT) transformers and also temperature sensors(LM35),LCD.
- These three sensors are connected to the arduino board as inputs and the output of these sensors are displayed in the LCD.
- In this project prefixed values have been setup for the sensors to funtion accordingly i.e voltage should be less than or equal to 220volts,current should be less than or equal to 1amp and temperature should be less than or equal to 50degree.
- In this case if any increse in the values set for sensors is observed then the kit is made to turned off automatically and the functioning shift to relays in order to display abnormalities.
- If the abnormalities are observed then the relay gets on and the message is sent to our mobiles through wifi and the buzzer gets activated.

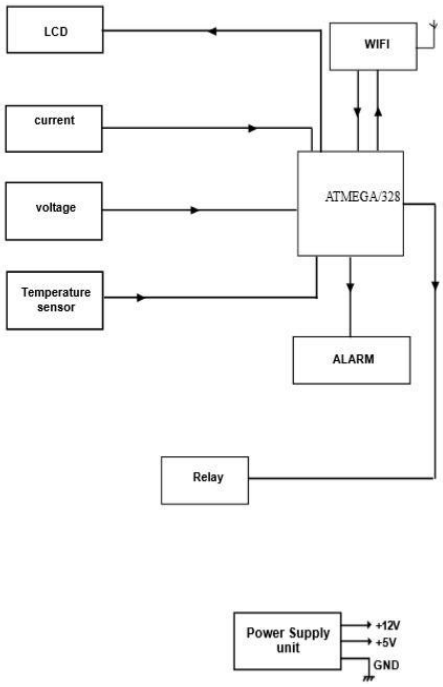

Fig.3.2.1: Block diagram

3.2.1 FLOW CHART

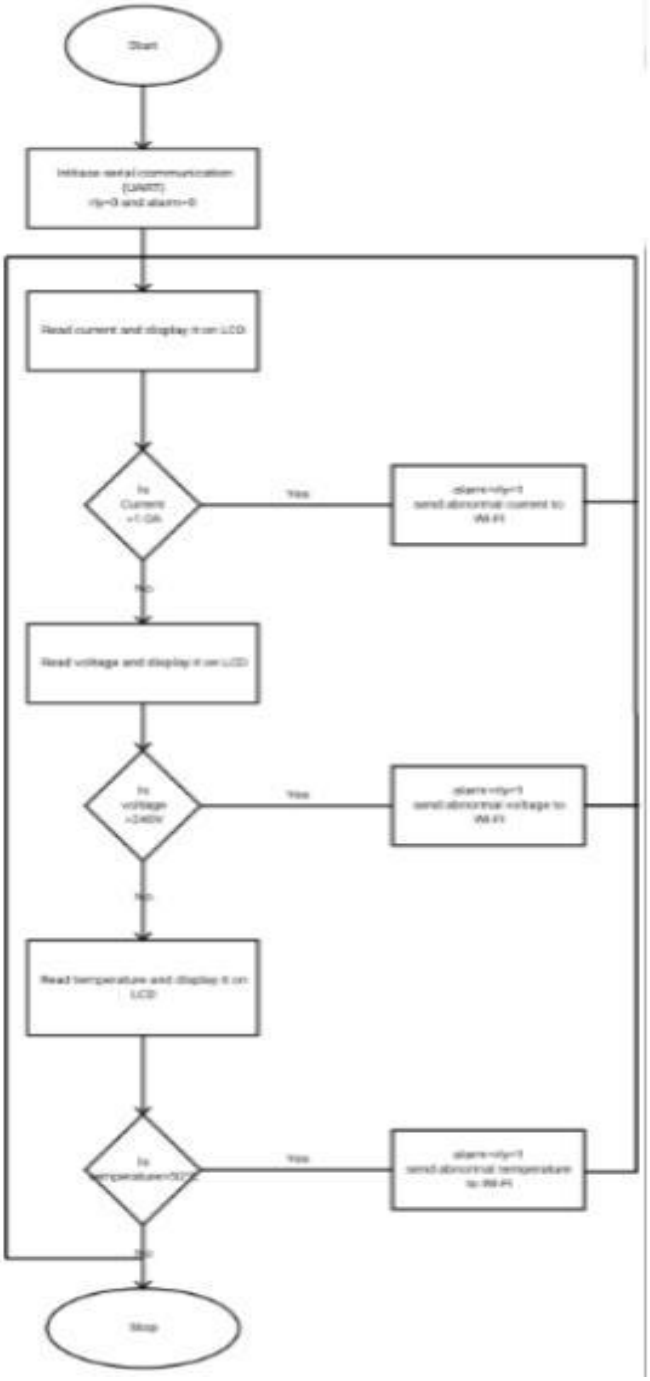

Fig 3.2.1.1 : The Flow chart shows how the refrigerator is controlled.

- This above flow chart explains us about the entire process in detail

IV. ANALYSIS

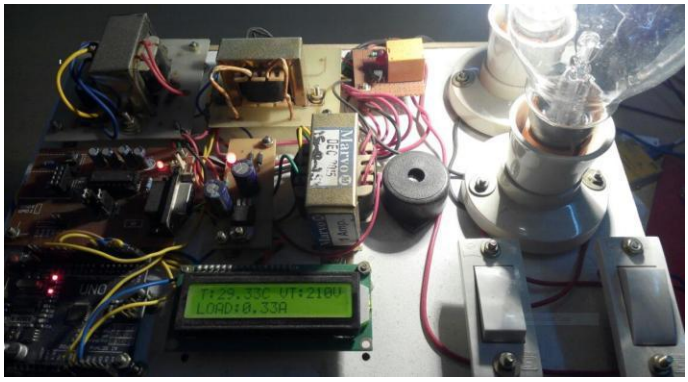

Fig 4.1: If the three sensors are under the condition

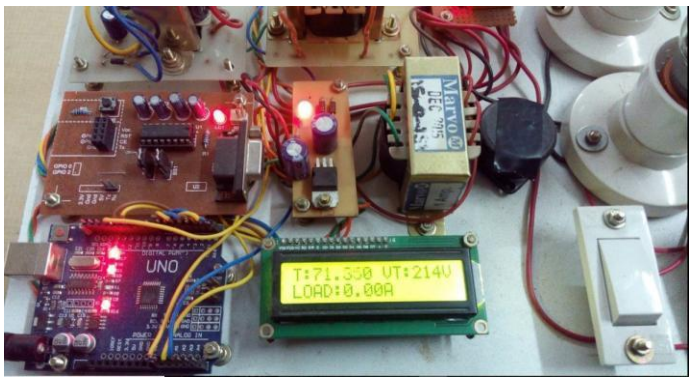

Fig 4.2:If the temperature exceeds 50 degrees

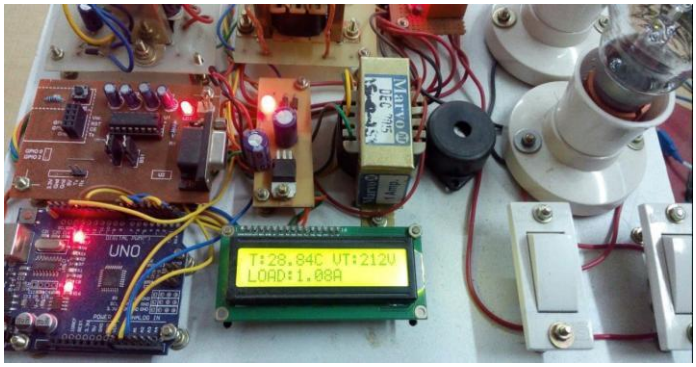

Fig 4.3:If the currennt exceeds 1amp

V. FEATURES

1. These save the time,and energy.
2. Automation and controlling can be done.
3. Communication id done easily.
4. Low maintenance cost.

VI. CONCLUSION

The project work Titled **"IOT enabled smart refrigerator"** is successfully designed & developed, and a demo unit is fabricated and the results are found to be satisfactory. Since it is a demo module, we have considered for three parameters only and according to that LCD panel is used for displaying the values. But when the system is utilized for real applications the refrigerator other parameters can also be monitored.

VII. FUTURE SCOPE

The concept of smart refrigerator is far more reaching than notifying the user about the contents of the refrigerator. It should give importance on maintaining a healthier lifestyle by provinding the nutritional value of the contents. The future smart refrigerator can use the gas sensor to check the freshness of food item and also use the cctv camera foe visualization of all activities inside the refrigerator and display it to the user in real time and to monitor the replacement of food items kept inside it.

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