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Smart Saline Bottle System for Monitoring and Tracking the Electrolyte's Level Using IOT

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ABSTRACT:

- All most in all hospitals, the nurse is responsible for monitoring the saline bottle liquid level. But unfortunately most of the time, the observer may forget to change the bottle at correct time due to their busy schedule.
- To overcome this critical situation, we proposed a IOT based automatic alerting and indicating device which is based on the principle that the sensor output changes when the weight of the saline bottle is below certain limit.
- If such a monitoring system is built, it will decrease the chances of a patient's hazards and increase the accuracy of health care in hospitals.

KEYWORDS: Arduino Uno, Weighing Machine, LCD Display, GSM 900A, Power Supply, Results

I. INTRODUCTION

Smart saline bottle system for monitoring and tracking the electrolyte's level using IOT can be used for monitoring the saline bottle level. This system can be developed by using the electronic components like Arduino Uno, LCD display, Weighing Machine and GSM. By using this system,it will decrease the chances of a patient's hazards and increase the accuracy of health care in hospitals.

To use this application user has to register with the mobile number by sending a text message to GSM. When the mobile number is registered with GSM, it displays the number on the screen.whenever a cause occurs the device will work according to that cause using the Arduino Uno.Analyzed data is worked with the set of rules that the admin sets to the device.Nurse gets the SMS alerts and messages regarding the work done by the device in the field.

II. PROPOSED METHODOLOGY

There are 3 types of modules we have:

1.Field Unit

2.Sensor info Unit

3.Nurse Unit

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Field Unit: It is an automatic smart saline device, working of this module is automatic whenever a cause occurs the device will work according to that cause using the Arduino UNO. In this unit we have all types of the sensors or the components that sense the cause and analyze. Analyzed data is worked with the set of rules that the admin sets to the device.

Sensor info Unit: In the module all the data regarding the sensors will be available analyzed by the sensors. The unitis very crucial in the total modules.

Nurse Unit: Nurse gets the SMS alerts and messages regarding the work done by the device in the field.

III. DETAILED DESCRIPTION OF COMPONENTS

1. Arduino Uno:

The Arduino is open-source, which means hardware is reasonably priced and development software is free.The Arduino programming language is a simplified version of C/C++. If you know C, programming the Arduino will be familiar. If you do not know C, no need to worry as only a few commands are needed to perform useful functions. An important feature of the Arduino is that you can create a control program on the host PC, download it to the Arduino and it will run automatically. Remove the USB cable connection to the PC, and the program will still run from the top each time you push the reset button.

2. Weighing Machine:

Weighing Machine acts as a sensor and is used to identify the weight of the saline bottle and the electrolyte's level in the saline bottle.

3. LCD Display:

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.Many microcontroller devices use 'smart LCD' displays to output visual information.

4. GSM 900A:

GSM (Global System for Mobile communications) is a cellular network, which means that mobile phones connect to it by searching for cells in the immediate vicinity.GSM also pioneered a low-cost, to the network carrier, the short message service (SMS, also called "text messaging"), which is now supported on other mobile standards as well. The GSM network is divided into three major systems: the switching system (SS), the base station system (BSS), and the operation and support system (OSS).

5.Power Supply:

A power supply can be broken down into a series of blocks, each of which performs a particular function.

Each of the blocks is described in more detail below:

- Transformer - steps down high voltage AC mains to low voltage AC.
- Rectifier - converts AC to DC, but the DC output is varying.
- Smoothing - smooths the DC from varying greatly to a small ripple.
- Regulator - eliminates ripple by setting DC output to a fixed voltage.

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6.Results:

Fig1.Starting the IOT

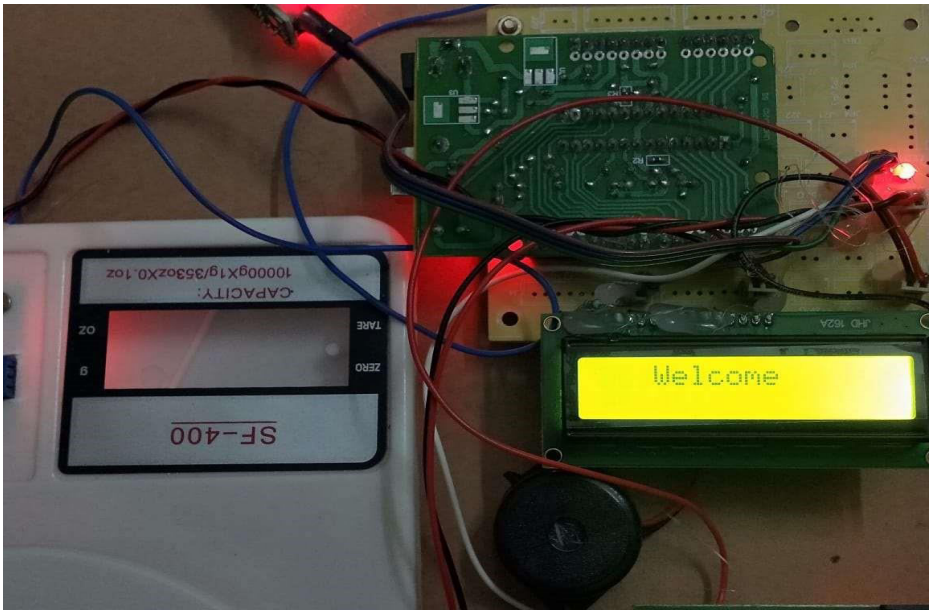

Fig2.Prompting to Connect a mobile

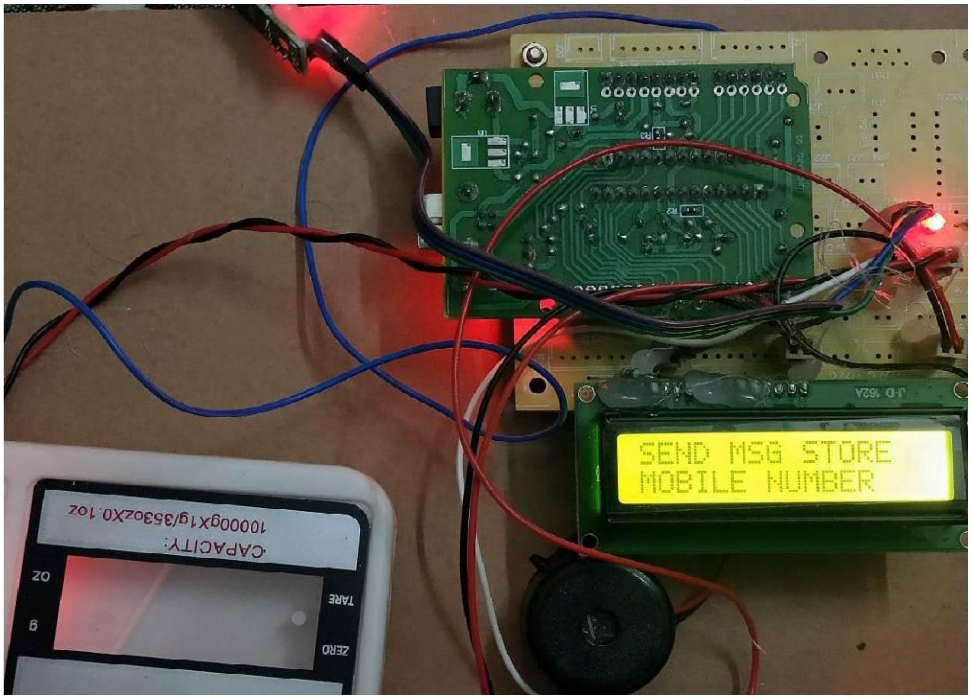

Fig3.Registering Device With Mobile Number

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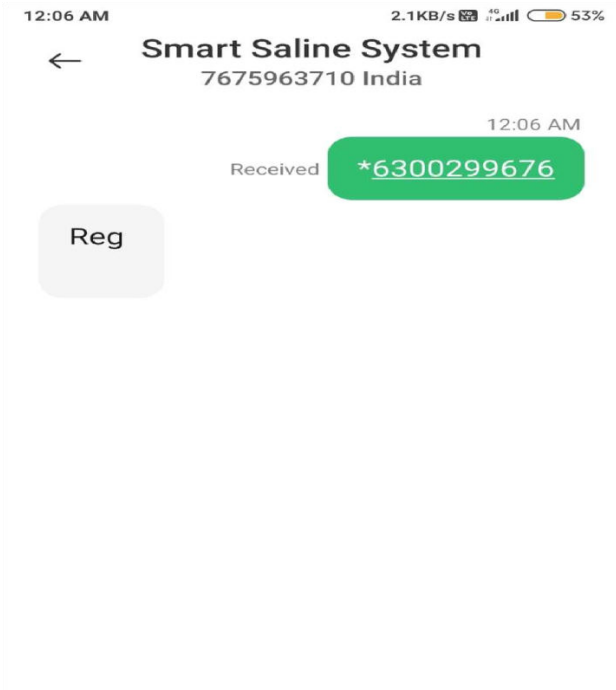

Fig4.Number registered in IOT

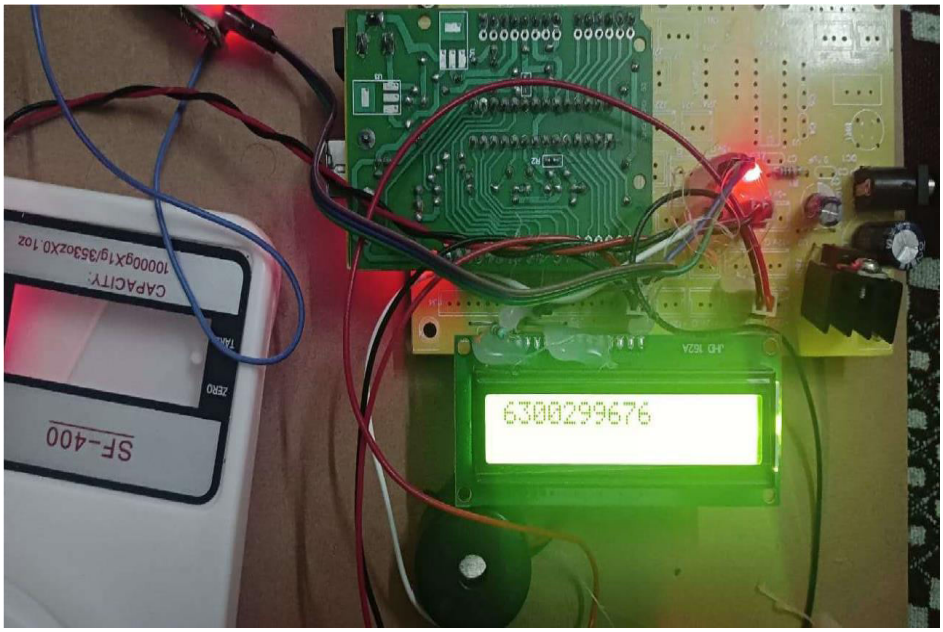

Fig5.Showing percentage level of saline bottle

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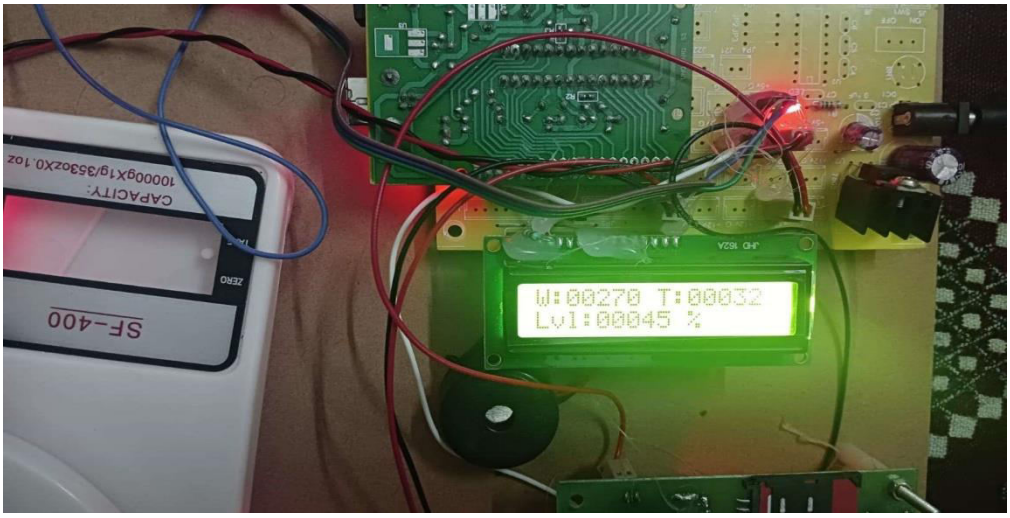
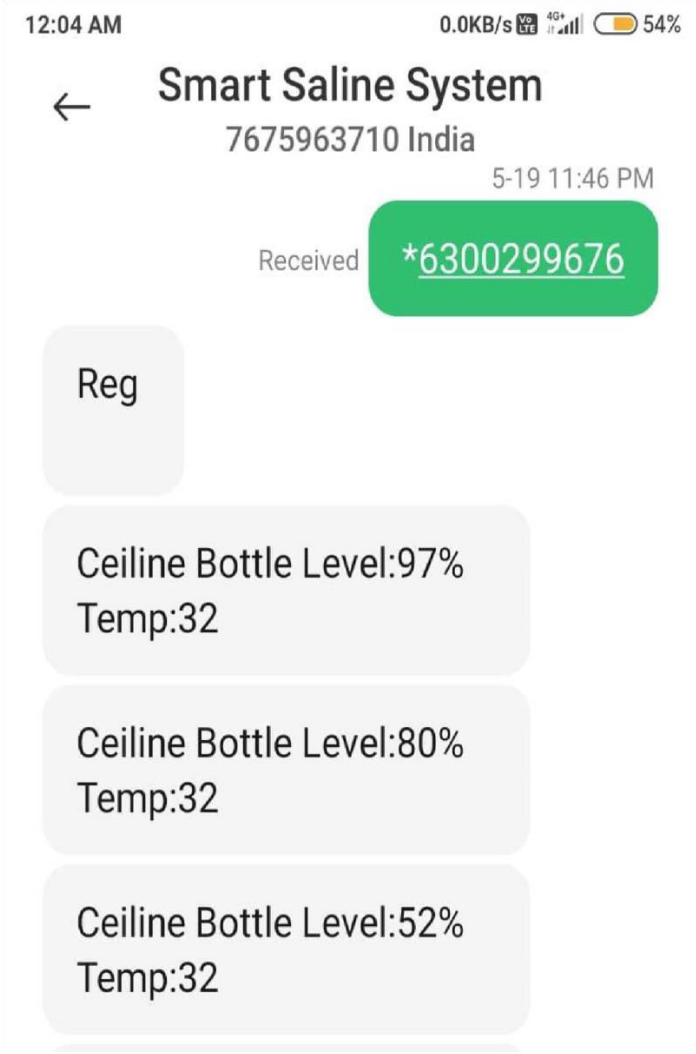


Fig 6.Message Received To Mobile



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IV.SYSTEM OVERVIEW

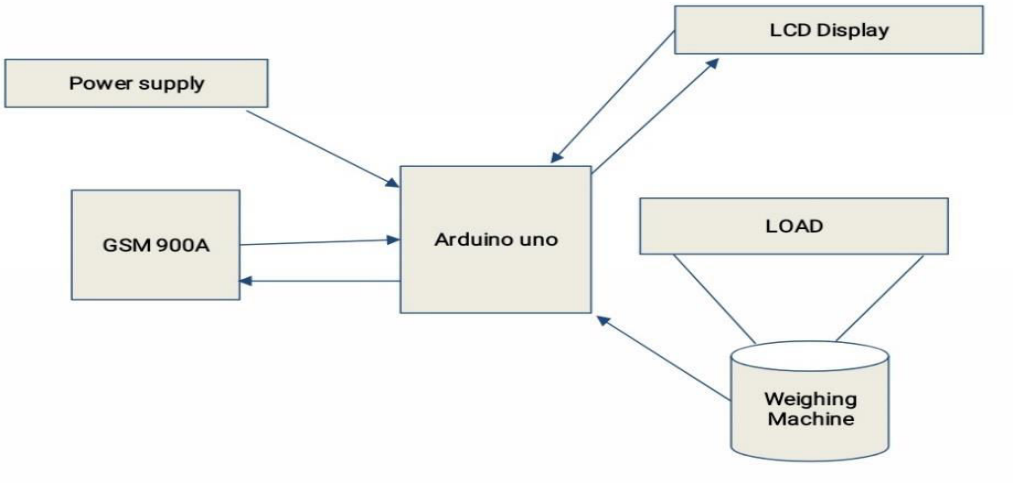

Fig6: System design

V.CONCLUSION

Through this project we are able to come up with aefficient solution in the medical field. To conclude, the entire project is about alerting the medical staff based upon the level of Saline in the bottle. If the Saline level reaches threshold the system automatically sends the message to the staff. Thus the staff can react and take care of the patient condition. As the entire proposed system is automated, it requires very less human intervention. It will be advantageous at night as there will be no such requirement for the nurses to visit a patient's bed every time to check the level of saline bottle.

VI. FUTURE SCOPE

This project can also be added to the smart card attendance system so that the controller gets the details of the absence of a faculty member and also can send a message to the doctor about the absence of faculty and alert another faculty to take position of that absent faculty. The flow control mechanism proposed can be modified and used in other fields such as chemical mixing. The devices used in our project can be replaced by any alternative or better mechanism can be used for pressing and the proposed work can be interfaced with a keypad for better results. In future, the system can be extended to a distributed wireless network system. The flow control mechanism proposed can be modified and used in other various fields. Furthermore, with the development of embedded hardware, more complex embedded coding can be done. The sending and receiving speed of a security alert message is high, so this can be used to give more kinds of applications in the future.

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