

# IMPLEMENTATION OF SMART DISPLAY SYSTEM

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## ABSTRACT

*In a couple of decades, we can see a rapid growth in technology in the fields like IoT, security, digital systems etc. The electronic displays which are currently used are programmable displays which need to be reprogrammed each time. This makes it inefficient for real time data transfer. These systems will display data which user transmits and there is no information about the availability of the authorized person. Hence we are providing a solution to this problem. The main aim of this project is to broadcast information to large number of people wirelessly.*

**Keywords:** Arduino, Dot matrix, GSM, IOT, RTC.

## I. INTRODUCTION

In last few years, there is a tremendous growth in the technology where IoT plays a significant role. Internet of Things (IoT) is a trending technology which builds connection between various devices throughout the world over a network with or without internet.

Our project explains about GSM and IoT based electronic display system which can be used to replace current programmable electronic display. The current programmable display system needs to be programmed each time which is a tedious job and there is no information regarding the availability of a person in the current display system. We can see that people keep waiting for the authorized person and they don't have idea about how long to wait to meet that person. Due to this, time which is an important factor is been wasted. This makes the current system inefficient. We can overcome this problem with the help of GSM and Wi-Fi. GSM can be used for long distance communication and Wi-Fi can be used for short distance communication. If there is a problem with either GSM or Wi-Fi module, we can communicate using other.

## II. RELATED WORK

The authors in [1] proposed a digital notice board using GSM SIM900 and LCD. It is an android application based project where a person can send a message using GSM which will be displayed on LCD. The authors in [2] designed a system which uses Wi – fi and Bluetooth for serial data communication. They implemented a wireless calling and message, displaying on a remote digital display board. The authors in [3] designed a system which uses monitor or television to display the data sent by the user. They used HTML to display output running on the raspberry pi. The authors in [4] gave a sight on Internet of Things (IoT). The concept of IoT and the key requirements for its design has been proposed.

The authors in [5] have designed display system using ATmega328P-PU microcontroller and GSM. It also has speaker and mike so that user can send the message through mike and receiver can get the transmitted data through speaker. The authors in [6] designed a notice board using ARM-LPC2148 and graphical display. It has multiple displays connected to a decoder to select the display device and the information to the display device is sent through GSM. The authors in [7] have developed a web page to send the message to raspberry pi. The sent message is stored in database and displayed on the monitor. The authors in [8] gave an idea on working of GSM modem and they have modified the application of GSM module according to user.

### **III. PROPOSED WORK**

In the existing notice board, we only display the message to be conveyed. We are introducing a display system which contains three rows. In first row we are going to display date, time and temperature by interfacing RTC with Arduino. In second row we are going to display the name of a person. Initially in the third row we will display the time table of that person, this time table will be stored in the database. On matching the time with RTC, the pre-defined schedule will be retrieved from the database and that data will be displayed. If there is any change in the schedule like he has any meetings or other activities then he can send a message through mobile by connecting to the Wi-Fi if he is nearby or with the help of GSM, if he is far from the place.

In the current display system, we can see that there is only one row which displays the information sent. Here, in our project we have a three row display system which gives information regarding time, date, name of the person and his availability. We have two ways through which we can transmit information. If any of the way fails, we can send it through other. In this way our project is different and efficient than any other related projects.

#### **3.1 METHODOLOGY**

The below block diagram shows the interfacing of Arduino with GSM and Database through RTC and Wifi module.

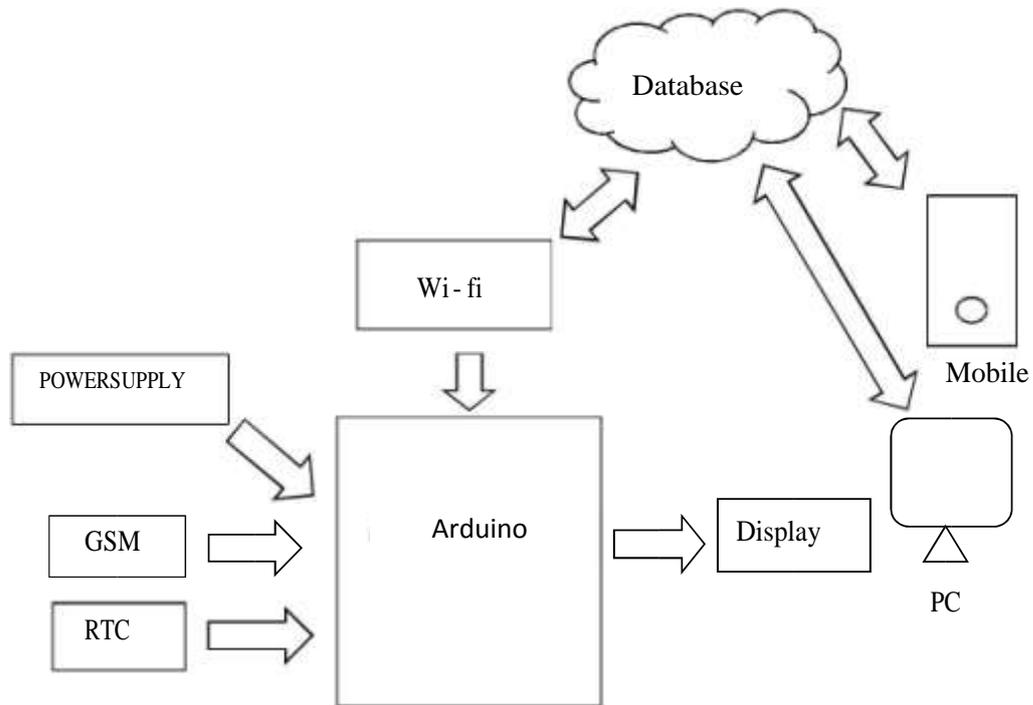


Fig.1: Proposed Block Diagram of implementation of Smart Display

Table 1: Components required for implementation of Smart Display

Components	Model	Requirements/use
Arduino	Uno	For interfacing
Dot Matrix	MAX 7219	To display
GSM	SIM900	To send information
Wi - fi	ESP8266	To send information
RTC	DS3231	To extract current time and date

3.2 FLOW CHART:

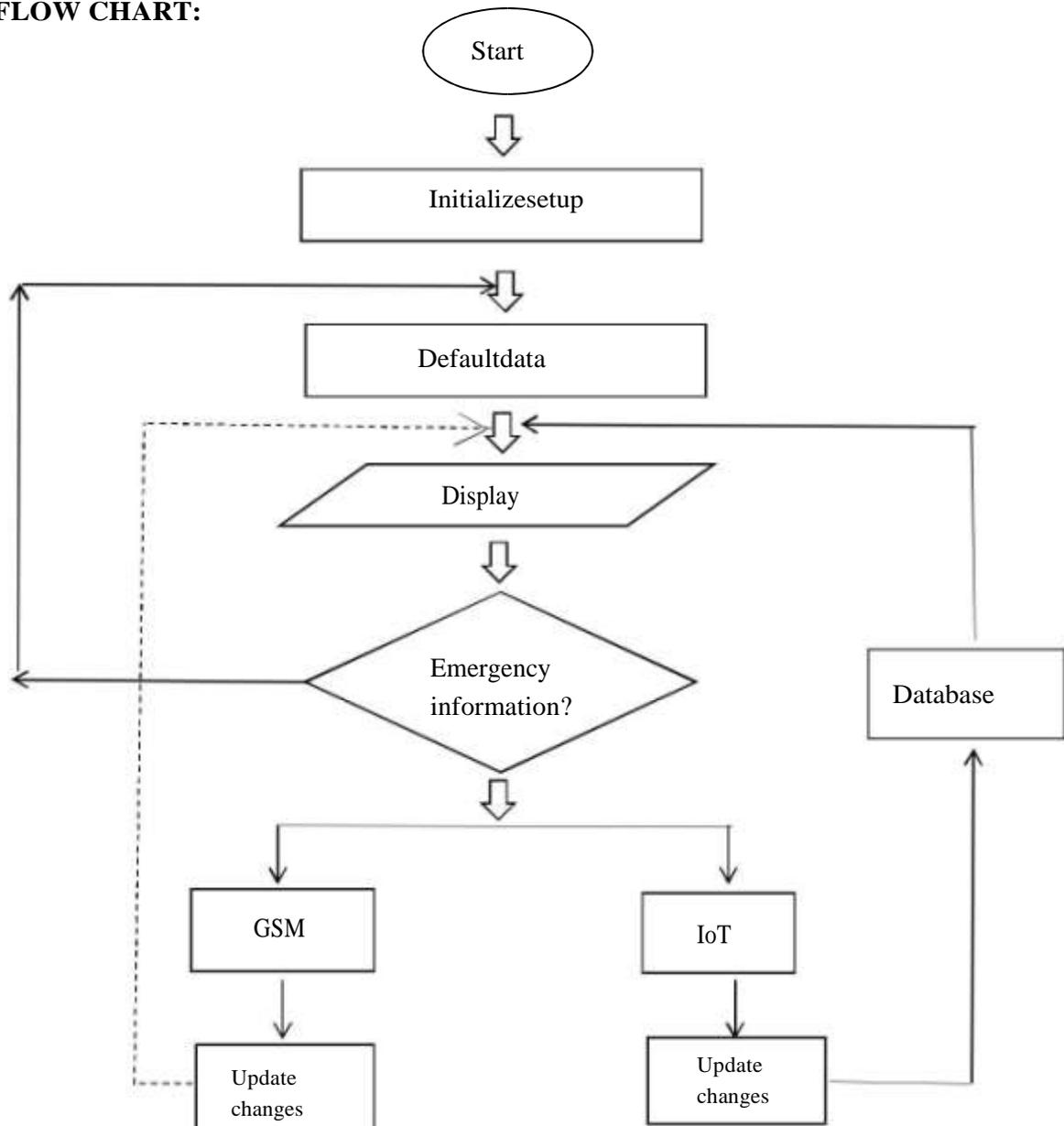


Fig 2: Flow chart of Smart Display system working.

Complete flow of our project is shown above. Initially the name, date, time and time table of the person will be displaying on the display module which serves as the default data. These default data will be stored in database. If any modification, those changes are updated in two ways.

1. GSM: The information which needs to be updated is sent through the SMS to the GSM module and the changed data will be displayed on the display system.
2. IOT: The information which needs to be updated to the display module is sent through Wi – fi and stored in the database which can be retrieved and displayed.

If there is no quick notification or modification in the pre – defined schedule, then the default data will be displayed on the display module.

#### **IV. RESULT**

To display the result, we have taken a scenario of faculty name plate which can be used in colleges. In the first row, time, date and day is displayed using RTC. In the second row, name of the faculty is displayed and in the third row, time table of the faculty according to the predefined time table stored in the database is displayed. In case his schedule got changed, then he can send information regarding that using GSM or Wi – fi which will be displayed in third row.



Fig 3:Outputobtained.

#### **V. CONCLUSION**

Our display system gives information regarding the availability of a person and helps in data transfer efficiently. Quick notifications can be sent using GSM or Wi-Fi depending on the distance. This system can be used in schools, colleges and government sectors. It consumes less power and also reduces the waiting time. It reduces the cost of printing and photocopying the notices as information can be broadcasted to a large number of people wirelessly.

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