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Implementation of SMS based Automated Blood Bank using TIVA C Series TM4C123G for Rural areas

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Abstract — *Automated Blood Bank is an associate work that brings voluntary blood donors and those in need of blood on to a common platform. The designed work aims to overcome this communication barrier by providing a direct link between the donor and the recipient by using low cost and low power Tiva C Series TM4C123G. In this designed system, data about the donors will be collected by using Tiva C Series TM4C123G kit by installing systems at places such as hospitals, blood banks etc. These data will be stored in the database. User/Patients needs to access application and needs to enter his requirements about the blood in the application the requirements are matched with the database and message will be to that particular blood donor through GSM modem. It requires Micro USB of5V and 2A power supply only. Entire communication takes place via SMS (Short Messaging Service) which is compatible among all mobile types. This project aims at servicing the persons who seek donors who are willing to donate blood and also provide it in the time frame required. Automated Blood Bank tries to assist victims/patients/those in want of blood. The proposed work explores to find blood donors by using GSM based Tiva C Series TM4C123G Kit.*

I.INTRODUCTION

Every year the nation requires about 4 Crore units of blood, out of which only a meager 40 Lakh units of blood are available. There are multiple blood banks around the world , however none of them offer the capability for a direct contact between the donor and recipient. This is often a serious disadvantage notably in cases wherever there is associate degree pressing would like of blood. This project aims to beat this communication barrier by providing an immediate link between the donor and therefore the recipient by victimization low price and low power Tiva C Series TM4C123G. All communication takes place via SMS (Short Messaging Service) which is compatible with almost all mobile types."Automated Blood Bank" proposes to bring voluntary blood donors and those in need of blood on to a common platform. The proposed work aims at servicing the persons who seek donors who are willing to donate blood and also provide it in the time frame required. Automated Blood Bank tries to help victims/patients/those in need of blood. The proposed work explores to find blood donors by using GSM based Tiva C Series TM4C123G.

II.EASE OF USE

Global system for mobile communication (GSM) is a Globally accepted standard for digital communication. GSM is that the name of a standardization cluster established in 1982 to make a Standard European mobile phone standard that may formulate specifications for a pan-European mobile cellular radio system operating at 900 MHz.

The GSM system was designed as a second generation (2G) cellular phone technology. One of the basic aims was to provide a system that would enable greater capacity to be achieved than the previous first generation analogue systems.

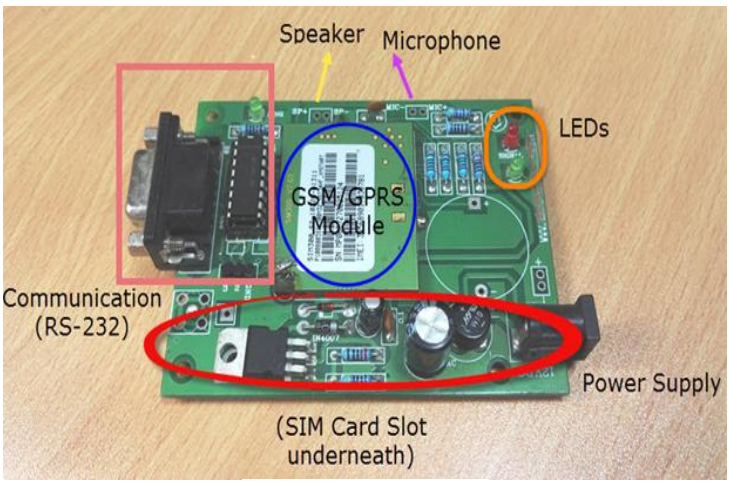

FIGURE2. GSM KIT

A **GSM modem** is a specialized type of modem which accepts a SIM card, and operates over a subscription to a mobile operator, just like a mobile phone.

III. TIVA C SERIES TM4C123G

The Tiva C Series TM4C123G LaunchPads are inexpensive self-contained, single-board microcontrollers, about the size of a credit card, featuring an ARM Cortex-M4F 32-bit CPU operating at 80 to 120 MHz, manufactured by Texas Instruments. The TM4C Series TM4C123G LaunchPad is an upgrade from TI's Stellaris LaunchPad adding support options for motion control PWMs and USB Host functionality. The more recently released TM4C1294 Title and Author Details Connected LaunchPad is the first cloud-connected offering in TI's LaunchPad ecosystem and provides a solid foundation for beginning and evaluating embedded IoT designs .

There are many I/O pins (40 to 80 depending upon version) that have multi-personality. This means that they can be easily configured as digital inputs or outputs, analog inputs and outputs or other functions, allowing a great variety of applications, are just the multiple serial ports have the ability to interface with more items such as test cards or other communication modules, etc. Among those pins there are included the GND and POWER (3.3 V) pins. The clock is 80 or 120 MHz (vers based), which makes them 5 to over 7 times faster than the Arduino Uno's 16 MHz ATmega328P microcontroller. As with any Cortex M4, the CPUhas some DSP (digital signal processor) instructions, with some limitations. One can do signal processing, for example, sampling a human voice with a good quality, able to be processed in MATLAB. The CPU contains the optional floating-point unit with single-precision floating point operations supported. They have an additional USB port which can act as USB additive color synthesis.

The Tiva C Series TM4C123G LaunchPads come preloaded with software to demonstrate many of the capabilities of the ARM microcontroller and with a quick start application to get up and running within minutes.
Included Tiva C Series TM4C123G device features:

- Tiva TM4C123GH6PMI microcontroller.
- Motion control PWM.
- USB micro-A and micro-B connector for USB device, host, and on-the-go (OTG) connectivity.
- RGB user LED.
- Two user switches (application/wake).
- On-board ICDI.

  Switch-selectable power sources:

  – ICDI

  – USB device.
- Preloaded RGB quick start application.
- Available I/O brought out to headers on a 0.1-in (2.54-mm).

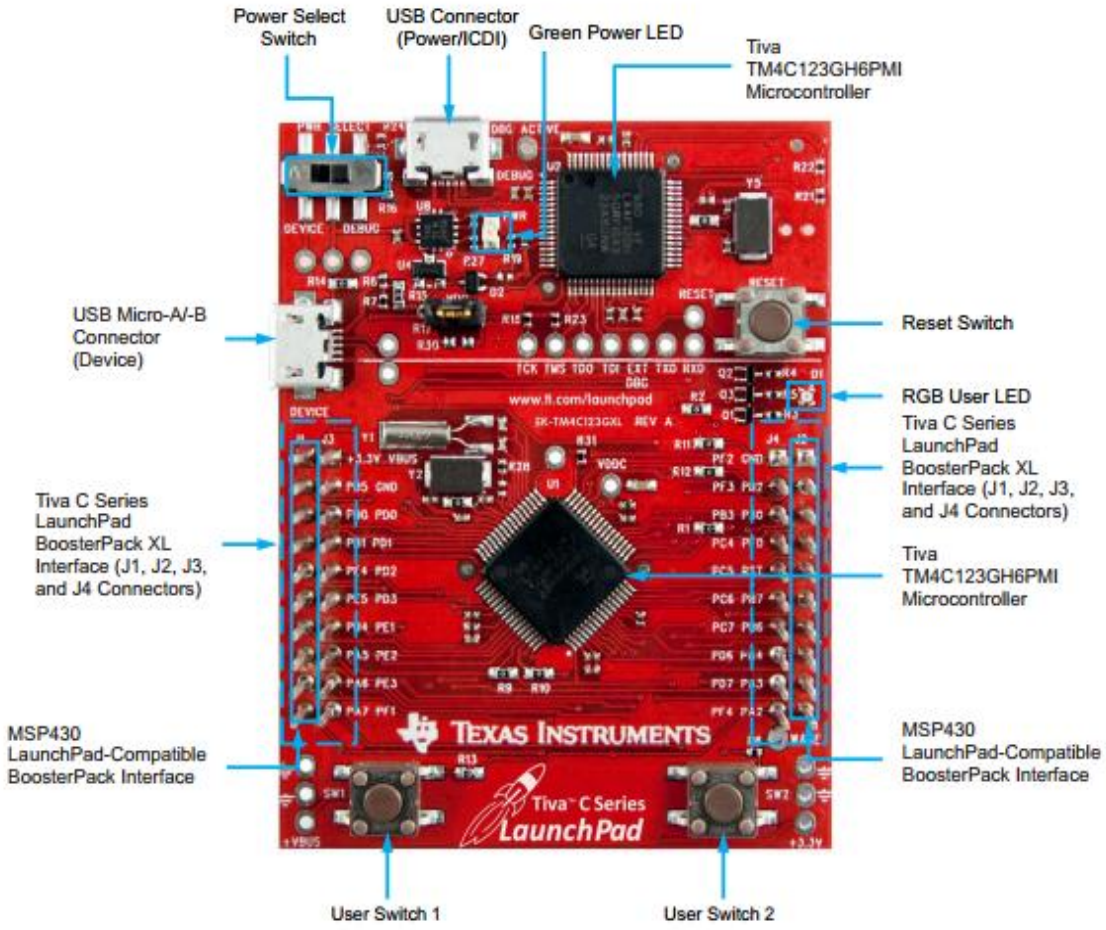

FIGURE 1. TIVA C SERIES TM4C123G LAUNCHPAD

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IV.MSP-EXP430G2553

The Texas Instruments MSP430 family of ultra-low-power microcontrollers consists of several devices featuring different sets of peripherals targeted for various applications. The architecture, combined with five low-power modes, is optimized to achieve extended battery life in portable measurement applications. The device features a powerful 16-bit RISC CPU, 16-bit registers, and constant generators that contribute to maximum code efficiency. The digitally controlled oscillator (DCO) allows wake-up from low-power modes to active mode in less than 1 µs.

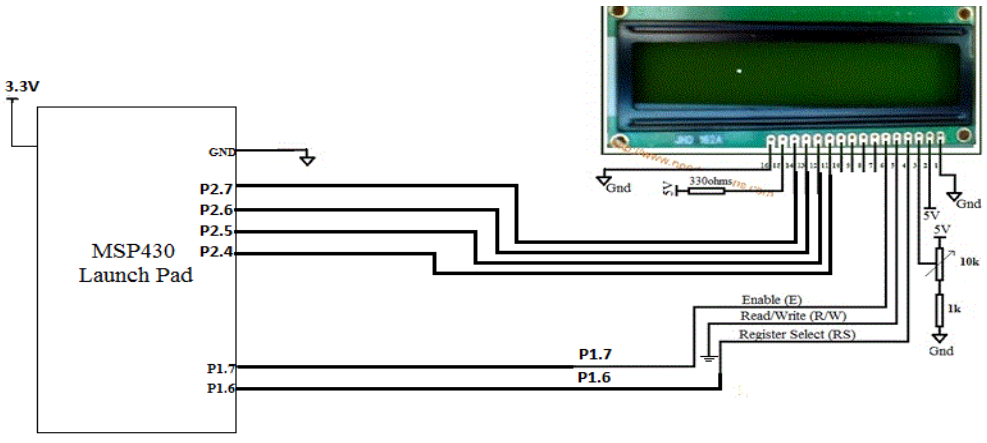


FIGURE 3. MSP-EXP430G2553 INTERFACE WITH LCD

V. BLOCK DIAGRAM

The proposed work explores to find blood donors by using GSM modem and Tiva C Series TM4C123G based system. In this system, it consists of GSM Modem, Tiva C Series TM4C123G kit. In msp430 kit, the person who wants to donate blood needs to register so that his information will be stored in the database.

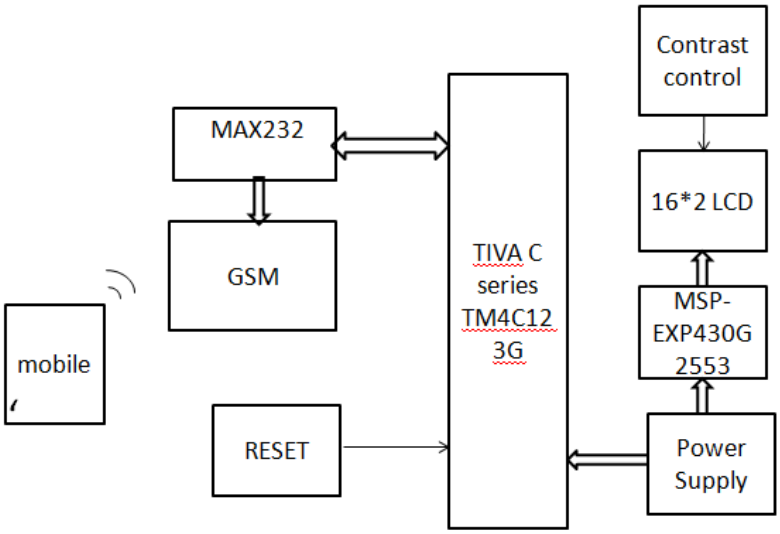


FIGURE 4 PROPOSING SYSTEM

The patient needs to send sms required blood group and current address. Donor needs to his/her details such as Name, Gender, Address and Mobile number. Whole system is implemented using Tiva C Series TM4C123G kit. Whenever there is requirement for blood then patient will send sms required blood group details. Then that information will be fetched from database and SMS will be sent to the donor directly on his number.

VI.PROJECT DESCRIPTION

Person/donor who wants to donate blood needs to register his details. This detail will be stored in Tiva C Series TM4C123G system database. User in need of blood will have to select required blood group and current address. Corresponding blood donor information will be fetched and displayed on screen. Patient needs to select donor and send SMS option on the screen.SMS will be send to blood donor directly through GSM Modem.

Automated Blood Bank brings voluntary blood donors and those in need of blood on a common platform. Through this application, individuals look for donors who are willing to gift blood, furthermore as give the timeliest support to those in frantic want of it. The mission is to fulfill every blood request in the country with a promising web portal and motivated individuals who are willing to donate blood.

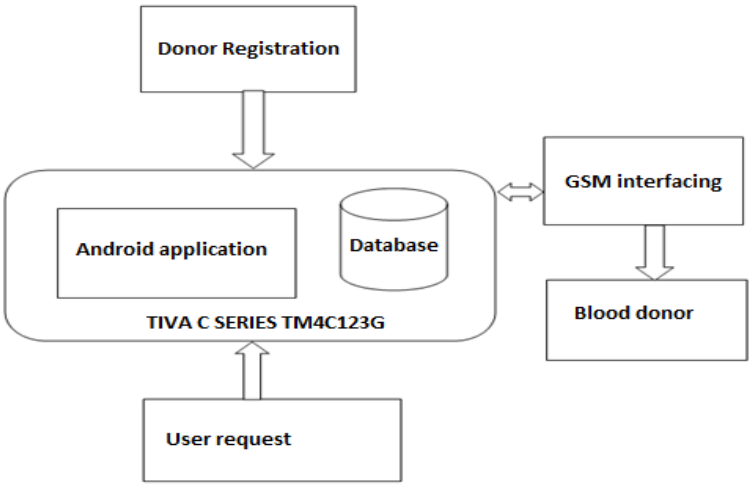


FIGURE4. FUNCTIONAL BLOCK DIAGRAM

VII.WIRELESS MODEM

Wireless MODEMs are the MODEM devices that generate, transmit or decode data from a cellular network, for establishing communication between the cellular network and the computer. These are manufactured for specific cellular network (GSM/UMTS/CDMA) or specific cellular data standard (GSM/UMTS/GPRS/EDGE/HSDPA) or technology (GPS/SIM).

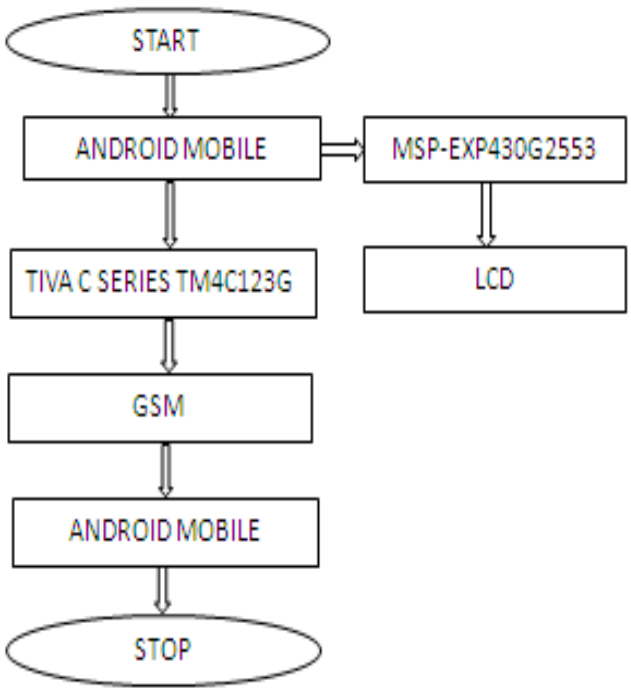
Wireless MODEMs like other MODEM devices use serial communication to interface with and need Hayes compatible AT commands for communication with the computer (any microprocessor or microcontroller system). GSM/GPRS MODEM is a class of wireless MODEM devices that are designed for communication of a computer with the GSM and GPRS network. It requires a **SIM (Subscriber Identity Module)** card just like mobile phones to activate communication with the network.

Also they have **IMEI** (International Mobile Equipment Identity) number similar to mobile phones for their identification. A GSM/GPRS MODEM can perform the following operations:
1. Receive, send or delete SMS messages in a SIM.
2. Read, add, search phonebook entries of the SIM.
3. Make, Receive, or reject a voice call.

The MODEM needs **AT commands**, for interacting with processor or controller, which are communicated through serial communication. These commands are sent by the controller/processor. The MODEM sends back a result after it receives a command. Different AT commands supported by the MODEM can be sent by the processor/controller/computer to interact with the GSM and GPRS cellular network.

A GSM module assembles a GSM modem with standard communication interfaces like RS-232 (Serial Port), USB etc., so that it can be easily interfaced with a computer or a microprocessor / microcontroller based system. The power supply circuit is also built in the module that can be activated by using a suitable adaptor.

VIII.FLOWCHART



X.RESULT & OUTPUT

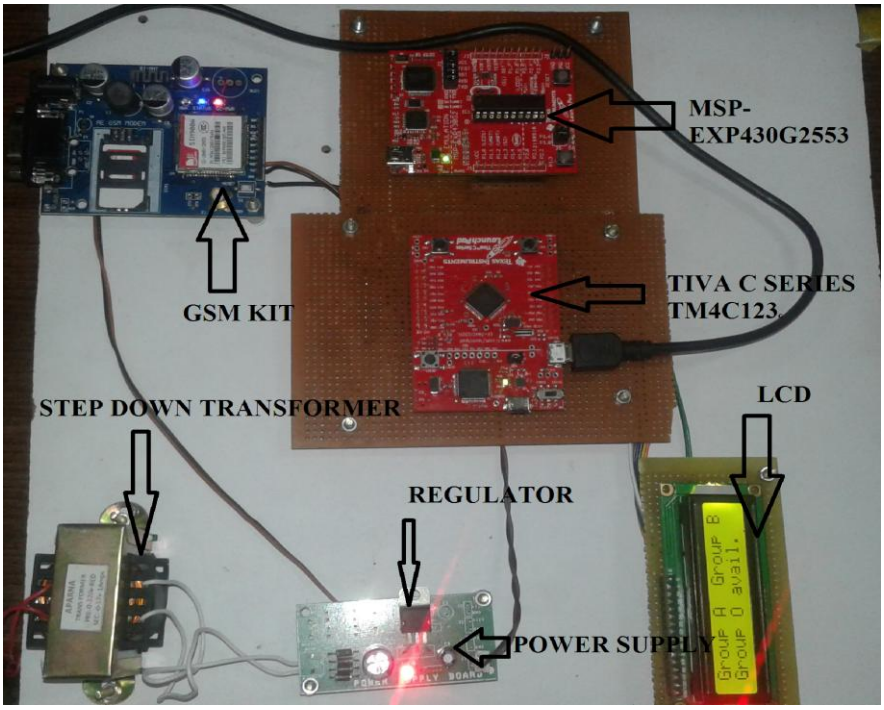


FIGURE5. OUTPUT

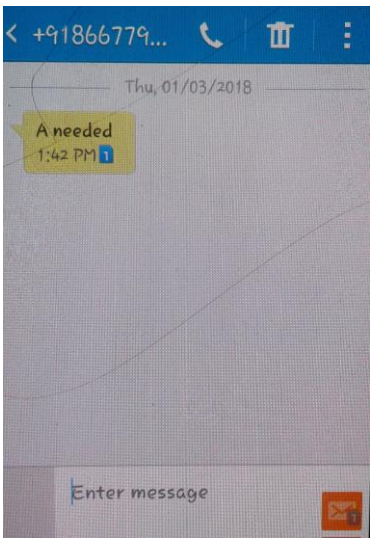


FIGURE 5.1 User sent request

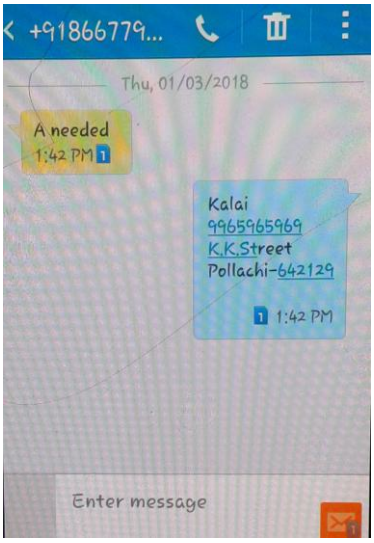


FIGURE 5.2 User received donor details

When there is urgent need for blood, it may not be possible for people to connect to the internet to look into the online blood database systems that are already in existence. If people adopt this model, the caller is immediately connected to the donor. Consider a SMS based database system is in which whenever a SMS is send to prospective
senders based on the demand. Here there will be a significant delay in the recipient side in viewing the SMS and then responding to it.

IX.CONCLUSION

Blood is the primary necessity of life. There are different scenarios available for searching blood donors. This proposed system will be one step ahead from the other blood donation systems. Blood recipient can contact the blood donor directly by using this system. This system can be used to reduce time span between donor and patient and it consists of Android mobile phone, Tiva C Series TM4C123G and GSM modem. There is direct communication between donor and

recipient through SMS so in case of emergency this system plays important role. Results shows different screens of the android mobiles where user needs to enter blood requirements and using this designed system one can get the fresh blood within the required time frame with the help of direct communication link.

X.FUTURE SCOPE

In future, this project acts as an important role in saving life of human beings and to reduce the time to a great extent that is spent in searching for the right donor and the availability of blood required. Thus this application provides the required information in no time and also helps in quicker decision making.

XI. REFERENCES

[1] .S.Ramya, Chithrakalamani .M,Christinal Florence .T(2017),' IoT Based Ubiquitous Healthcare System', International Journal of Scientific Engineering and Research (IJSER) ISSN (Online): 2347-3878 Index Copernicus Value (2015): 62.86 | Impact Factor (2015): 3.791.

[2]. Balasenthil murugan.L, Anitha Julian (2015),'Design and Implementation of Automated Blood Bank Using Embedded Systems', IEEE Sponsored 2nd International Conference on Innovation, Embedded and Communication systems (ICIIECS) 2015, 978-1-4799-6818-3/15.

[3]. Arif. M. Sreevas .S, Nafseer. K and Rahul. R. (2012), 'Automated online Blood bank database', India Conference (INDICON), Annual IEEE, Print ISBN: 978-1-4673-2270-6, pp. 012 - 017.

[4]. Bing-Nan Li, Taipa Ming-Chui Dong, and Vai, M.1. (2006), From Codabar to ISBT 128: Implementing Barcode Technology in Blood Bank Automation System', 27th Annual International Conference of the Engineering in Medicine and Biology Society, IEEE-EMBS, pp. 542-545.

[5]. Ibrahim. M and M. Youssef (2012), 'CellSense: An Accurate Energy-Efficient GSM Positioning System Vehicular Technology, IEEE Transactions on Volume: 61, Issue: 1, ISSN: 0018-9545, pp. 286 - 296.

[6]. Karan Punjabi, Pooja Bolaj, Pratibha Mantur, and Sneha Wali (2014), 'Bus Locator via SMS Using Android Application', (IJCSIT) International Journal of Computer Science and Information Technologies, ISSN: 0975-9646, Vol. 5 (2), pp. 1603-1606.

[7]. Mohamed Ibrahim and Moustafa Youssef (2011), 'A Hidden Markov Model for Localization using Low-End GSM Cell Phone', Communications (ICC), IEEE International Conference, ISSN: 1550-3607, E-ISBN: 978-1-61284-231-8, Print ISBN: 978-1-61284-232-5, pp. 1 - 5.

