

ASTROBELL FOR MODERN SMART HOME

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Abstract- The AstroBell is an exciting new hardware project which allows users to interact with visitors at their front door in a fun and functional way via., their Smartphone, tablet or smart watch. Assess the caller, then respond quickly and easily with a personal message, or choose from a list of pre-loaded templates, which will appear instantly on the AstroBell for your visitor to see. AstroBell is the safest implementation of technology over cloud and embedded with hardware systems which come as a portable device for seamless communication between the front door person and Smartphone user. A Wi-Fi enabled battery-powered hardware device encompassing pushbutton, LCD screen and USB camera. This unit will be located on the user's front door. A cloud server hosting the main AstroBell database that enables communication between the AstroBell devices on the user's front door.

Keywords-- Smart phone, LCD Screen, USB camera, Flash Magic, Keil UVision.

1. Introduction

An embedded system is a computer system designed to do or a few dedicated and specific function often with real-time computing constraints. It is embedded as part of a complete device often including hardware and mechanical parts. By contrast, a general-purpose computer, such as a personal computer, is designed to be flexible and to meet a wide range of end-user needs. Embedded systems control many devices in common use today.

Today a number of microcontrollers are available on the market from different vendors. But the design of embedded applications with microcontrollers having advanced features is gaining more prominence [1]. Previously most of these systems were designed based on PIC, AT89C51, AVR and other microcontrollers. But in the present scenario, designers are looking for ARM (Advanced RISC Machine) processors due to the availability with tremendous features which are more suitable for embedded system design. ARM is a low cost, high performance and low power consumption microcontroller which is useful to the designers with flexible and cost effective platform for the development of embedded applications. Based on these points of view ARM processor is selected as the heart of the system.

Embedded system contains processing cores that are typically either microcontroller or digital signal processors. The key characteristic is being dedicated to handle a particular task, which may require very powerful processors. Since the embedded system is dedicated to specific tasks, design engineers can optimize it to reduce the size and cost of the product and increase the reliability and performance. Embedded systems range from portable device such as digital watches and MP3 players, to large stationary installations like traffic lights. The ARM simulator not only eliminates the barriers of embedded systems' hardware environment, but also improves the efficiency, security and reliability for the development process [2].

The ARM9-LPC2929 STICK BOARD is specifically designed to help students to master the required skills in the area of embedded systems. The board is designed in such way that all the possible features of the microcontroller will be easily used by the students. The board

supports Keil μ Vision 4 compilers with Keil ULink2. The SIM 900A is a quad band GSM/GPRS device which consist of SMT components can be embedded in a customer applications [3]. It is designed with the powerful single-chip processor AMR926EJ-S core. It supports TCP/IP protocol in stack form.

The present system is implemented by developing a suitable embedded C program using KEIL μ Vision4 software. This is an integrated development environment (IDE) with embedded C/C++ compiler for ARM which supports simulation and debugging interface. The software developed is compiled and uploaded to the flash memory using Flash utility (PHILIPS) [4].

AstroBell is an exciting new hardware project which allows users to interact with visitors at their front door in a fun and functional way via., their Smartphone, tablet or smart watch is presented in [5]. Assess the caller, then respond quickly and easily with a personal message, or choose from a list of pre-loaded templates, which will appear instantly on the AstroBell for your visitor to see.

2. Existing System

The existing AstroBell for Modern Smart Home are static and hence cannot be used for practice in the daily walk of life. It requires connecting the mobile phone to the server that connects to AstroBell. Partially solved, not fully implemented. Then implementing the camera into the system is a large challenge that couldn't done in the existing system. Implement end-to-end solution for alerting sending message from mobile phone to hardware LCD display, but not yet.

Disadvantages of Existing System

The existing AstroBell for Modern Smart cannot be used for practice in the daily walk of life. But our system will overcome these features and give high performance application.

3. Proposed System

The proposed system of this project is to Send messages to the AstroBell device from anywhere in the world. Take a photo of who is at the door and send to the E-Mail. Battery-powered hardware device encompassing push-button, LCD screen and USB camera. This unit will be located on the user's front door. (Pictured, right). A cloud server hosting the main AstroBell database that enables communication between the AstroBell device on the user's front door and the E-Mail using a mixture of REST services.

Advantages of Proposed System

- Home-owner alerted every time a visitor is at their door.
- Early stages of implementing photo-sending ability.
- Ability to send message to visitor at door via Smartphone.
- Ability to view who is at door via Smartphone (E-Mail).

Block Diagram

Block diagram of the proposed system is shown as below

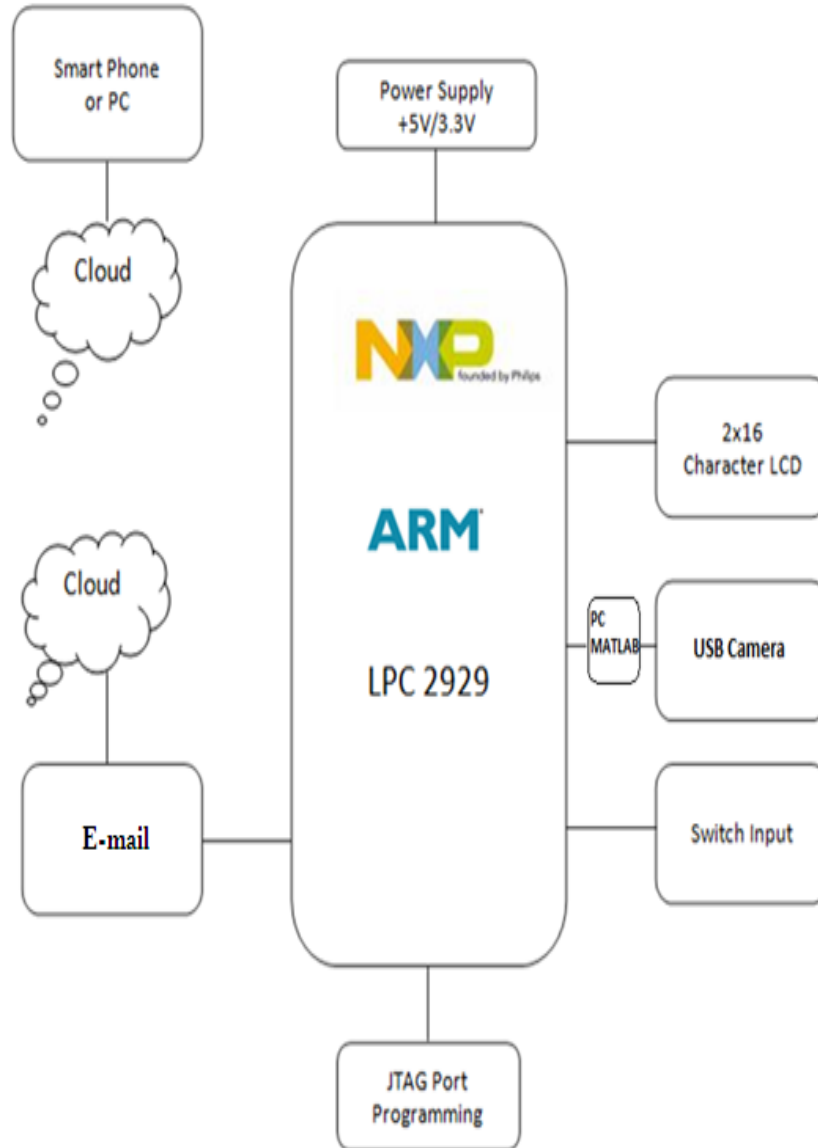
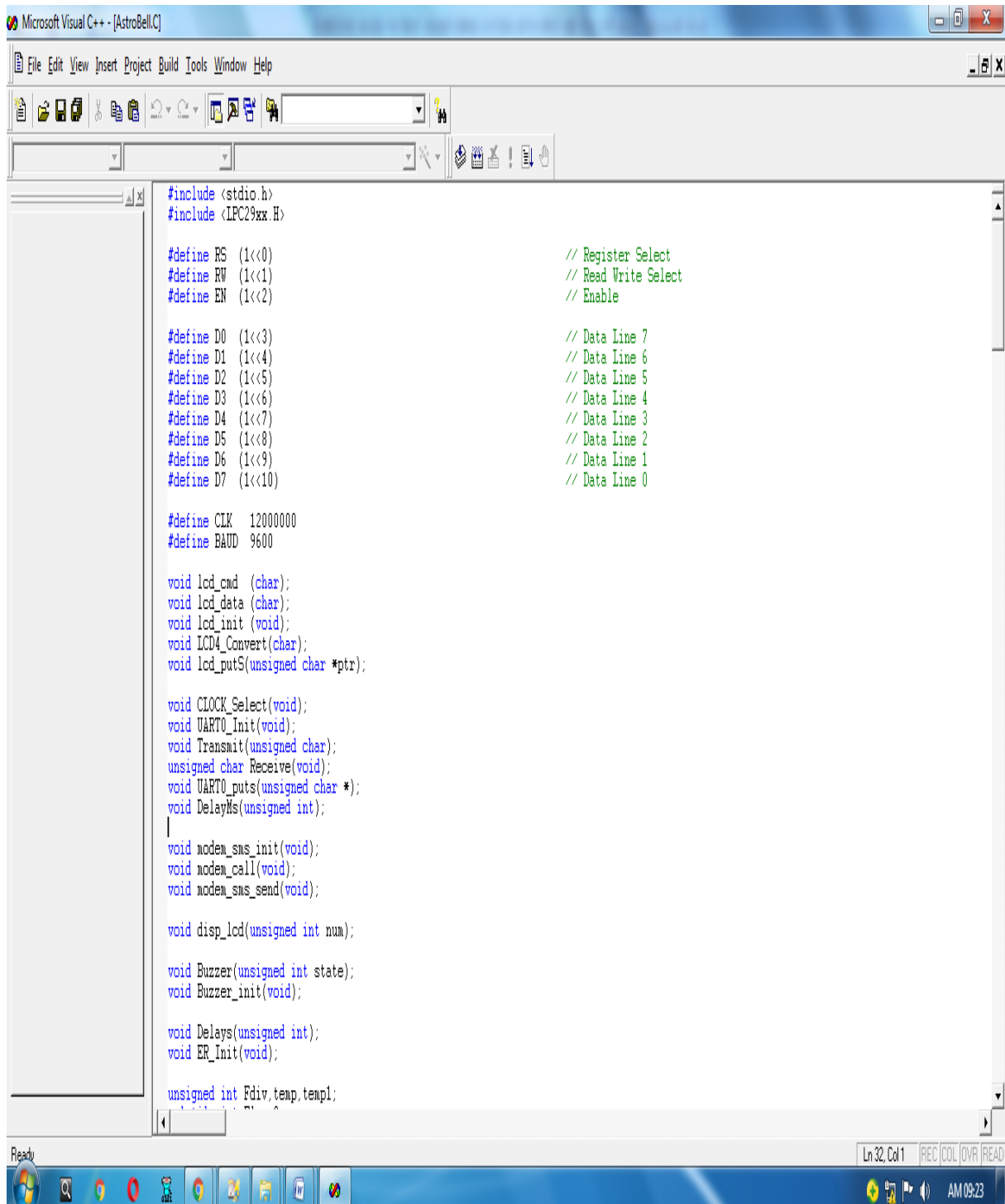


Fig. 1 Block Diagram

4. Results and Discussion

The Results of the source code of our system is shown below



```
#include <stdio.h>
#include <LPC29xx.H>

#define RS (1<<0) // Register Select
#define RW (1<<1) // Read Write Select
#define EN (1<<2) // Enable

#define D0 (1<<3) // Data Line 7
#define D1 (1<<4) // Data Line 6
#define D2 (1<<5) // Data Line 5
#define D3 (1<<6) // Data Line 4
#define D4 (1<<7) // Data Line 3
#define D5 (1<<8) // Data Line 2
#define D6 (1<<9) // Data Line 1
#define D7 (1<<10) // Data Line 0

#define CLK 12000000
#define BAUD 9600

void lcd_cmd (char);
void lcd_data (char);
void lcd_init (void);
void LCD4_Convert(char);
void lcd_puts(unsigned char *ptr);

void CLOCK_Select(void);
void UART0_Init(void);
void Transmit(unsigned char);
unsigned char Receive(void);
void UART0_puts(unsigned char *);
void DelayMs(unsigned int);
|
void modem_sms_init(void);
void modem_call(void);
void modem_sms_send(void);

void disp_lcd(unsigned int num);

void Buzzer(unsigned int state);
void Buzzer_init(void);

void Delays(unsigned int);
void ER_Init(void);

unsigned int Fdiv,temp,temp1;
```

Fig. 2 Verification of Code

5. Simulation Results

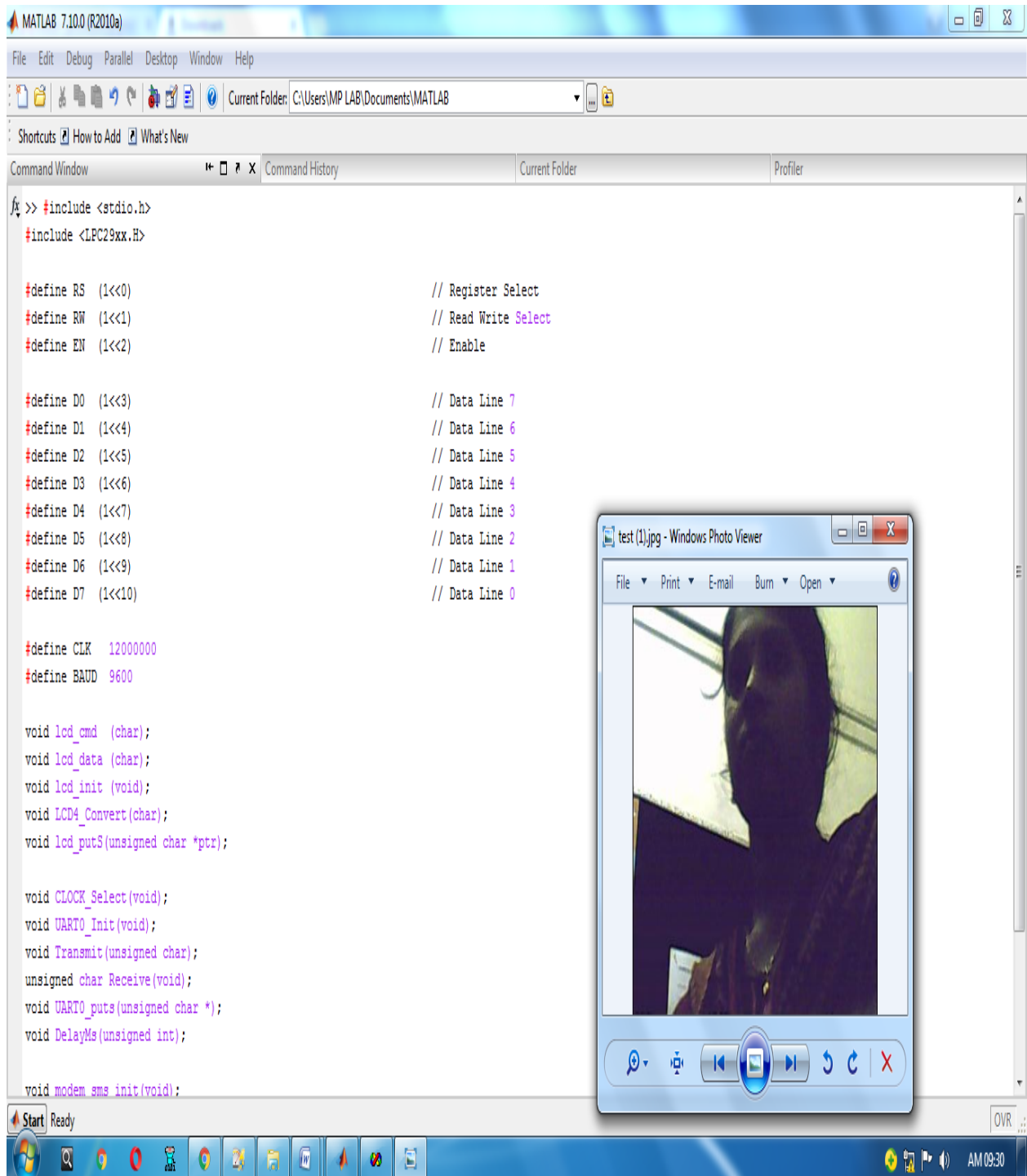


Fig. 3 Simulation results

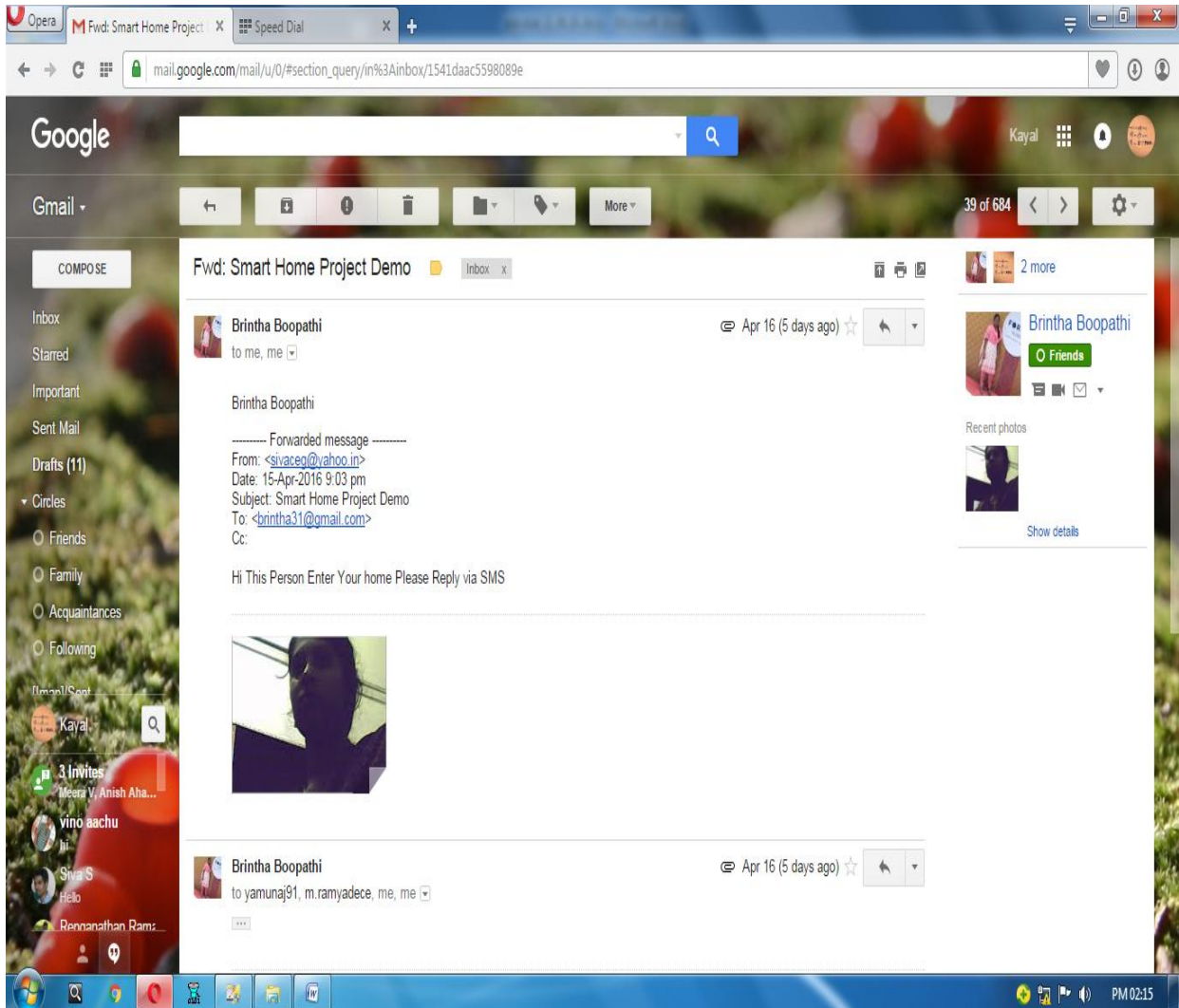


Fig.5 Final Output

6. Conclusion

This project helps to Take a photo of who is at the door and send to the E-mail. This project helps to Send messages to the AstroBell device from anywhere in the world. This project provides an improvement for the security system through Internet of Things. So IOT is the platform to facilitate interaction between the Users and the visitor. Further development of the ringer hardware, which will only receive very simple implementation for this project.

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