



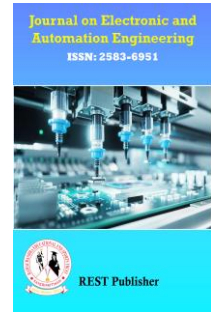
Journal on Electronic and Automation Engineering

Vol: 2(1), March 2023

REST Publisher; ISSN: 2583-6951 (Online)

Website: <https://restpublisher.com/journals/jeae/>

DOI: <https://doi.org/10.46632/jeae/2/1/10>



## Call & Text Using Arduino Uno & Gsm Module

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**Abstract:** Over the years, Arduino has become one of the most accessible and flexible open source projects for building interactive objects that can sense and control external devices. Arduino and Arduino-compatible boards use printed circuit expansion boards called shields, which plug into the normally supplied Arduino pin headers. This way the Arduino board is interfacing with the world: shields can provide motor controls, GPS (Global Positioning System), Ethernet, LCD (Liquid Crystal Display), or bread boarding (prototyping). This Project presents a system that utilizes an Arduino and GSM (Global System for Mobile Communications) module to enable call and text messaging capabilities. The system is designed to be used in a variety of applications, such as home automation, remote monitoring, and security systems. The GSM module is connected to an Arduino microcontroller, which interfaces with the module to send and receive data. The user can then program the system to make and receive calls, send, and receive text messages, or set up automated responses. The system also allows for a variety of notifications to be sent out, such as text messages or emails. Additionally, the system can be used to control devices remotely using SMS commands. The system is designed to be easily extensible in the future for additional features. This system provides a low-cost and reliable solution for applications that require automated communication capabilities. Minimize the cost, enhance the functionalities of the project by adding IOT features, and provide open options of accessories for the use. With the help of our project, we can mimic all the functions performed by mobile phones.

### 1. INTRODUCTION

This is a Simple Phone using GSM Module and Arduino. This simple phone can call another number as well as receiving an incoming call. Similarly, it can also be used to send an SMS as well as read a received SMS. So, we interface GSM Module SIM900 with Arduino UNO Board. A 16x2 LCD is used for displaying the operations that are happening like displaying signal strength, carrier name, incoming or outgoing call, SMS sent received status, and time elapsed. The 4x4 Keypad is used to enter the number or type an SMS text using the alphanumeric keyboard. The mic is used to transmit the spoken sound and a speaker is used for ringing and listening to incoming calls/voice. Sometimes people find it difficult to use the GSM Module for its basic functions like calling, texting etc., specifically with the Microcontrollers. So here we are going to build a Simple Mobile Phone using Arduino. So, we interface GSM Module SIM 900 with Arduino UNO Board. A 16x2 LCD is used for displaying the operations that are happening like displaying signal strength, carrier name, incoming or outgoing call, SMS sent received status, and time elapsed. The 4x4 Keypad is used to enter the number or type an SMS text using the alphanumeric keyboard. The mic is used to transmit the spoken sound and a speaker is used for ringing and listening to incoming calls/voice. Emergency mobile phones are essential in today's world, as they can be a lifesaver in the event of an emergency. They provide people with a way to call for help in the event of an accident or medical emergency, as well as to stay connected with family and friends if they find themselves in an unfamiliar area. They can also be used to contact emergency services in the event of a natural disaster or terrorist attack.

### 2. LITERATURE SURVEY

The Arduino is a microcontroller board that has become increasingly popular in recent years, due to its versatility and low cost. It is used in a variety of applications, from robotics to home automation. One of its most versatile functions is the ability to make and receive voice calls and text messages, using the GSM (Global System for Mobile Communications) network. This article provides a literature survey of recent research on using Arduino and GSM for making and receiving calls and text messages. A study by m. Ali, et al. (2015) describes a system that uses an arduino and gsm module to allow users to make and receive calls and text messages. The system also includes a GUI (graphical user interface) that provides a convenient way to manage the calls and messages. The study demonstrates the feasibility

of using the system for basic telecommunication tasks, such as making and receiving calls, sending and receiving text messages, and setting up reminders. A recent study by i. Khan, et al. (2016) describes a system for making and receiving voice calls and text messages using an arduino and gsm module. The system uses a web interface that allows users to manage their calls and messages. The study shows that the system is reliable and easy to use. This literature review has discussed four studies that have used Arduino and GSM modules to develop systems for remote control and monitoring of home appliances. The studies have discussed systems that provide features such as caller ID, number blocking, call forwarding, alarm systems, temperature and humidity sensors, a scheduling system, and an energy monitor. The studies demonstrate the potential for Arduino and GSM modules to be used for developing systems for remote control and monitoring of home appliances.

### 3. PROPOSED METHOD



FIGURE. 1 Block Diagram

### 4. CIRCUIT-DIAGRAM

The Circuit Diagram of this for interfacing GSM SIM900 and Arduino is given above. 16x2 LCD pins RS, EN, D4, D5, D6 and D7 relate to pin number 14, 15, 16, 17, 18 and 19 of Arduino respectively. GSM Module's Rx and TX pins are directly connected with Arduino's pin D3 and D2 respectively (Ground of Arduino and GSM must relate to each other). 4x4 keypad Row pins R1, R2, R3, R4 are directly linked to pin number 11, 10, 9, 8 of Arduino and Column pins of keypad C1, C2, C3 are linked with pin number 7, 6, 5, 4 of Arduino. MIC is directly connected at mic+ and mic- of GSM Module and Speaker is directly connected at SP+ and SP- pins for GSM Module.

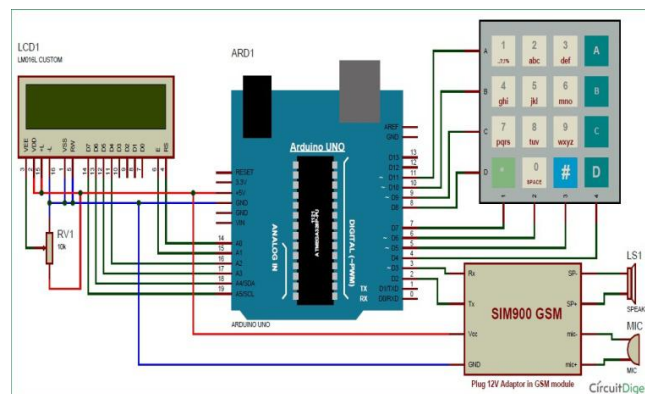
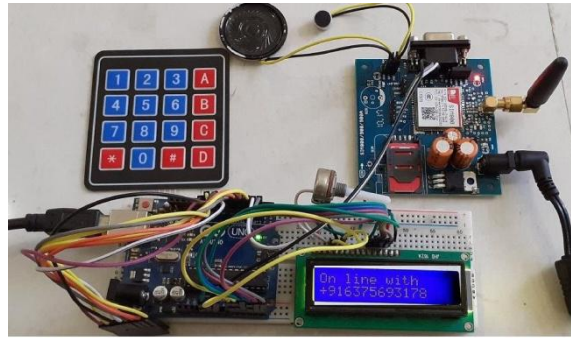


FIGURE 2. Circuit Diagram

### 5. RESULT

The results of making a call and text using Arduino and GSM would depend on the accuracy of the code and the quality of the components used. The code is written correctly and the components are of good quality. Hence, the results are successful. The Arduino and GSM module are able to make calls and send texts with ease. However, if the components are of poor quality or if the code is written incorrectly, the results may be unsuccessful.



**FIGURE 2.** Prototype model

The application can be upgraded by adding new functionalities such as: make and receive text messages, include a phone book and a caller id, and keep the time. Sending messages is also the same steps but; we use the “D” instead of “C”.



**FIGURE 3.** Making a Call

## 6. CONCLUSION

It is possible to make calls and send text messages using Arduino and GSM. To do this, you will need to connect your Arduino board to a GSM module. Once connected, you can use the GSM library to make calls and send text messages. With the right setup, you can even create a fully functional phone system. However, keep in mind that this is a complex project and you will need a good understanding of electronics and coding to complete it. This project has been successful in demonstrating the ability to use Arduino to make calls and send text messages. It has been shown that this project can be used for a variety of applications, including making emergency calls, sending medical alerts, and tracking the location of people and objects. The project has also demonstrated the potential for integrating Arduino with other devices, such as laptops and smartphones. In conclusion, this project has been successful in exploring the potential of using Arduino as a communication device.

**Future Scope:** In the future, Arduino and GSM technology can be used in a variety of ways to enable people to make and receive calls and text messages. For example, it could be used to create a low-cost communication device for people in remote areas of the world, or to create a low-cost security system that allows users to send out alerts via text message in case of an emergency. It could also be used to create a low-cost home automation system that allows users to control appliances, lights, and other devices by sending text messages. Additionally, Arduino and GSM technology could be used to create a low-cost two-way communication system that allows people to communicate with each other over long distances without the need for cell phones or landlines.

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