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# IOT Based One Button Dialing

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**ABSTRACT:** The goal of the project One Button Dialing using Arduino Uno and SIM800L is to use easily accessible parts to design and build a straightforward and effective communication system. The main goal is to combine the Arduino Uno microcontroller and SIM800L GSM/GPRS module to construct a gadget that enables customers to make phone calls with just a single button press. The lone button that makes up the user interface is positioned for maximum accessibility. The SIM800L module receives an instruction from the Arduino Uno to start a call to a predetermined number when the button is pressed.

## I. INTRODUCTION

The system's principal goal is to establish One-Button Dialing using SIM800A Module and Arduino Uno. The Internet of Things (IoT) has become a transformative force in the ever-changing environment of modern communication, reshaping the way gadgets communicate and interact with one another. This project, "One-Button Dialing using SIM800A Module and Arduino Uno," explores the Internet of Things and offers a useful and approachable solution. Our everyday lives depend more and more on communication, therefore it's critical as ever to have accessible, easy-to-use, and effective means of contact. The main goal of this project is to create and put into place a simplified communication system that enables users to make phone calls by simply pressing a button.

### 1.1 ELECTRONICAL GADGET:

The Arduino Uno and SIM800A GSM/GPRS module are combined in the One-Button Dialing Electronic Device to provide a simple method of making phone calls with just one button press. A push button is integrated for user interaction, and when the button is pressed, the Arduino code uses the SoftwareSerial library to monitor its state and send AT commands to the SIM800A module to call a pre-programmed phone number. This small, easy-to-use device can be customized to meet unique use cases because of its versatility. It is intended for applications like automated notifications or emergency alert systems that require simplified call initiation. The device is an example of a well-thought-out combination of software and hardware for communication, with an emphasis on user-friendliness and effective functionality.

### 1.2 REVIEW:

In India, people hold one-button dialling in high respect because to its practicality and simplicity, especially for elderly people and those who like basic phone features. By skillfully integrating this feature, phones such as the RAZ Memory Phone and Jio Phone let users to call pre-arranged contacts with just a single button push. This feature is very helpful for users who have trouble navigating complicated menus and in emergency situations. Reviews emphasise how this function improves the user experience by giving users fast, dependable access to key contacts, which makes these phones a sensible alternative for anyone who want simple communication options.

### 1.3 PROBLEM DESCRIPTION:

There are difficulties in implementing the One-Button Dialling system with the SIM800A Module and Arduino Uno, especially when it comes to possible problems like the SIM800A module's power management, dependable GSM network communication, and the requirement for strong error handling in the Arduino code. To improve the system's overall performance and dependability in real-world circumstances, it is imperative to attend to three crucial aspects: guaranteeing a steady power supply for the SIM800A, setting up the module to connect to the GSM network reliably, and putting in place efficient error handling procedures. To improve the system's overall performance and dependability in real-world circumstances, it is imperative to attend to three crucial aspects: guaranteeing a steady

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#### 1.4 GOAL:

One button dialing's main objective is to give users rapid, simple, and effort-free access to critical contacts or emergency services. With this feature, you can make a phone call by merely pushing one button, which is intended to speed up communication in emergency scenarios like medical emergencies or instances involving personal safety. It puts accessibility and usability first, making it suitable for people with restricted mobility, cognitive disabilities, or high-stress scenarios where traditional dialling would be difficult. By expediting communication and lowering obstacles to help-seeking when needed most, the ultimate goal is to improve emergency response capabilities and humansafety.

#### 1.5 PERSPECTIVE:

The utility of mobile phones is greatly improved by one-button dialling, especially when considering accessibility and emergency readiness. This function, which is common in phones like as the RAZ Memory Phone and the Jio Phone, lets users contact a pre-selected number by simply pressing a button, saving them from having to go through confusing menus. This feature acts as a vital lifeline for elderly people and those with cognitive or vision problems, making it simple for them to contact emergency services or carers. One-button dialling's simplicity increases independence and security, making it an essential component of mobile technology designed for vulnerable groups.

## II. SYSTEM SPECIFICATION

### 2.1 HARDWARE REQUIREMENTS:

- Processor -IntelCorei3Processor
- HardDisk -500GB
- RAM -4GB
- Mouse -Optical
- Microcontroller -Arduino UNO
- Module -SIM800L GSM Module
- Button -Push Button

### 2.2 SOFTWARE REQUIRMENTS:

- Object system - Windows 10
- IDE – Arduino

## III. PROJECT DESCRIPTION

### 3.1 BLOCK DIAGRAM:



Figure 3.1-Block diagram

### 3.2 BLOCK EXPLANATION:

#### 3.2.1 ARDUINO:

An open-source microcontroller platform called an Arduino board is used to create interactive projects. It is made up of a development environment for writing software for the microcontroller and a programmable circuit board. Digital and analogue input/output (I/O) pins on Arduino boards are available for connecting to a variety of sensors and actuators. They are employed in many different contexts, ranging from straightforward hobby projects to intricate automation



systems. The Arduino Integrated Development Environment (IDE) is easy enough for novices to use and robust enough for more experienced users due to its community support and ease of use. An Arduino board is essential for do-it-yourself electronics and robotics projects because to its versatility in controlling lights, motors, sensors, and other devices.

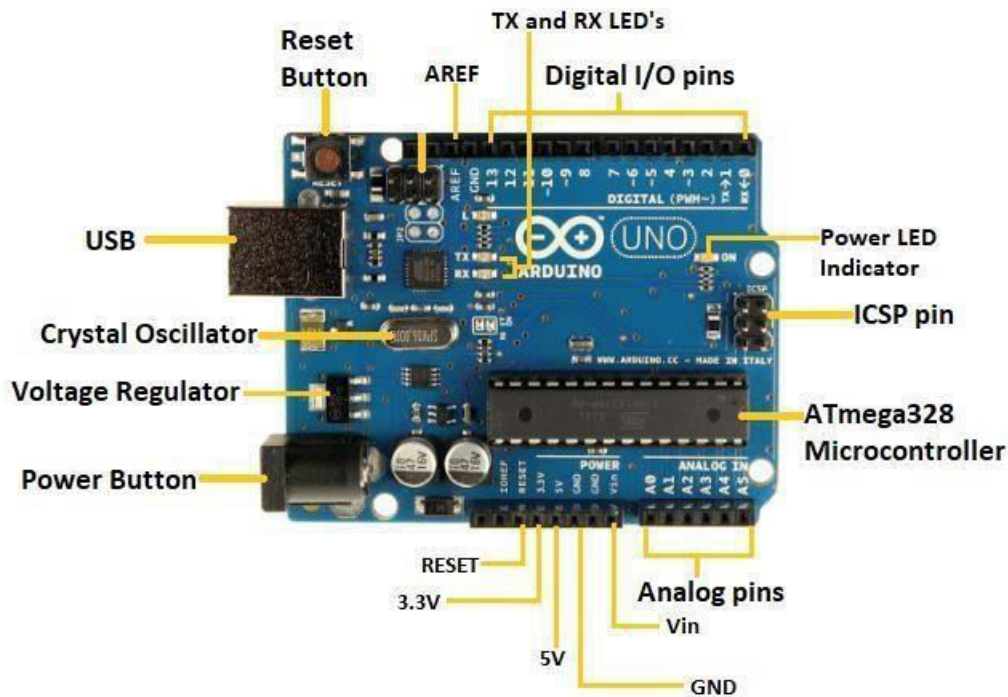


Figure 3.2.1-ARDUINO BOARD

### 3.2.2 BOARD ARCHITECTURE:

An Arduino board's architecture centres on a microcontroller, usually an ATmega328 seen on the Arduino Uno, or another member of the Atmel AVR series. The microprocessor, power supply pins, digital and analogue input/output (I/O) pins, and communication interfaces are important parts. The board has a voltage regulator, a crystal oscillator to provide precise timing, and a USB connector for programming and power. For authoring and uploading code, it also has an integrated development environment (IDE). Because the I/O ports enable communication with a range of sensors and actuators, Arduino is a flexible platform for developing and constructing interactive electronics projects. Because of its simple architecture and strong community support, Arduino is usable by both novice and expert users.

### 3.2.3 CPU ARCHITECTURE:

Dual-core Xtensa LX6 microprocessors, which are 32-bit RISC processors. Clock frequency can go up to 240 MHz. The dual-core design allows for better multitasking and performance.

### 3.2.4 MEMORY:

An Arduino board typically includes several types of memory to support its functions: flash memory, SRAM, and EEPROM. Flash memory stores the program code and is non-volatile, meaning it retains information even when the board is powered off. For example, the Arduino Uno has 32 KB of flash memory, with 0.5 KB used by the bootloader. SRAM (Static Random-Access Memory) is used for creating and manipulating variables while the program is running; the Uno has 2 KB of SRAM. EEPROM (Electrically Erasable Programmable Read-Only Memory) allows data to be saved between sessions, useful for storing settings or calibration values, and the Uno includes 1 KB of EEPROM. This combination of memory types allows the Arduino board to efficiently manage both temporary and permanent data storage, making it versatile for various applications

### 3.3 SIM800L GSM/GPRS Module

An electrical device known as an infrared sensor uses infrared radiation to either emit or detect specific features of its environment. In addition, it can detect motion and measure an object's heat. The human eye is not capable of seeing infrared radiation. The part of the electromagnetic spectrum that has wavelengths longer than visible light but shorter than microwaves is known as infrared radiation. There is an approximate boundary between 0.75 and 1000 $\mu$ m for the infrared region. Infrared technology can be found in numerous commonplace products. For instance, a television's infrared detector decodes signals from its remote control.

#### 3.3.1 SIM800L PIN DESCRIPTION:

##### 1. PowerSource(GNDandVCC):

Vcc: Attaches to a power source that delivers a voltage of 3.4V to 4.4V, usually 4.0V. Powering the SIM800 module is this pin.

GND: This is the ground pin, and it needs to be linked to both the power source and the Arduino's common ground.

##### 2. Exchangeand Get (TXD and RXD):

TXD (Transmit Data): The SIM800 module provides serial data to the Arduino via this pin. Attach it to the Arduino's RX (receive) pin.

Receive Data (RXD): The Arduino sends serial data to this pin. Attach it to the Arduino's TX (transmit) pin.

##### 3. RST(Reset):

The SIM800 module can be reset via the RST pin. Programmatically resetting the module can be facilitated by pulling this pin low, which resets the module

#### 3.4CIRCUIT DIAGRAM:

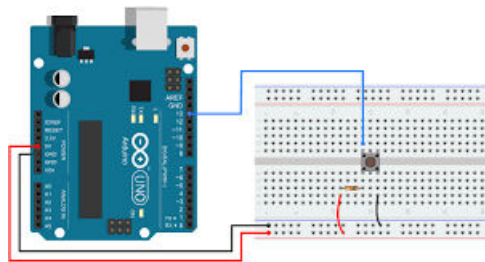


Figure 3.4-Circuit Diagram

## IV. IMPLEMENTATION AND RESULT ANALYSIS

### 4.1 STEPS TO CONNECT:

Step 1: Assemble the PartsMake sure you have the following parts: an Arduino Uno, a SIM800L GSM module, a power supply (5V DC), a momentary push-button, a SIM card, connecting wires, and any resistors that are needed.

Step 2: Link the SIM800L and Arduino Uno Using serial communication, link the Arduino Uno to the SIM800L module. Connect the GSM module's TX pin to the Arduino's RX pin and the other way around. Make sure the VCC and GND pins are connected correctly to provide power.

Step 3: Link the Arduino ButtonAttach the momentary push button to an Arduino digital input pin. If necessary, implement a pull-down resistor by connecting its ends to GND and the digital input pin.

Step 4: Insert SIM Card Taking care to align it correctly, insert the SIM card into the SIM800L module.

Step5:EnergySource Attach the Arduino Uno and SIM800L module to the power supply. Make that the voltage is appropriate for both components' functioning needs.

Step 6: Configure the ArduinoCreate and upload the Arduino code that causes the SIM800L module to start a phone call by reading button presses. For communication with the GSM module, use the AT instructions.

Step 7: Examine and FixCheck for any problems with the serial output as you upload the code to the Arduino. To make sure the system successfully places a call, press the button. If required, debug

## V. RESULT ANALYSIS

The examination of the one-button dialling system that uses the Arduino Uno and SIM module 800L shows that a simplified and easy-to-use communication solution has been successfully implemented. With the SIM800L module, the system responds to button presses quickly and effectively, starting phone calls. GSM communication is clearly dependable, enabling extensive network coverage. The outcomes also demonstrate how user-friendly and accessible the system is, accommodating a range of technical skill levels. But it's critical to examine any possible communication lag or problems, taking into account things like system responsiveness and network connectivity. All things considered, the fact that phone calls may be successfully started with only one button push highlights how well the suggested solution works to offer a convenient and quick way to communicate

## VI. FUTURE ENHANCEMENT

To further improve the operation and applicability of the one-button dialling using Arduino Uno and SIM module 800L a few future enhancements should be taken into consideration. First, its applications might be expanded by coupling with other sensors or modules. For example, GPS integration could provide location-based emergency calls, and environmental sensor integration could provide enhanced monitoring capabilities. Second, adding a more complex user interface—possibly with an LCD display—could improve user engagement and offer status updates. Moreover, voice recognition technology might enable users to make phone calls by using voice commands, which would be even more convenient. Future research opportunities include investigating compatibility with new communication technologies like 5G, adding security features, and improving power efficiency for longer battery life. Frequent software upgrades would guarantee the system stays up to date and adaptable by addressing new communication standards or adding new capabilities. All things considered, ongoing improvement and capability growth will support the system's continued applicability and efficacy in a variety of situations.

### 6.1. CONCLUSION:

To sum up, the project One Button Dialling using SIM800L Module and Arduino Uno offers a simple and intuitive way to start phone calls with just one button push. Through the integration of the SIM800L GSM module and the Arduino Uno microcontroller, the project provides a user-friendly interface that enables users to easily initiate phone conversations. The project's success is attributed to its accessibility and convenience of use, which makes it appropriate for situations when a simple yet efficient communication system is required. Further customisation and expansion are possible thanks to the modular design, which highlights the adaptability of microcontroller-GSM module integration for real-world uses.

## VII. RESULTS

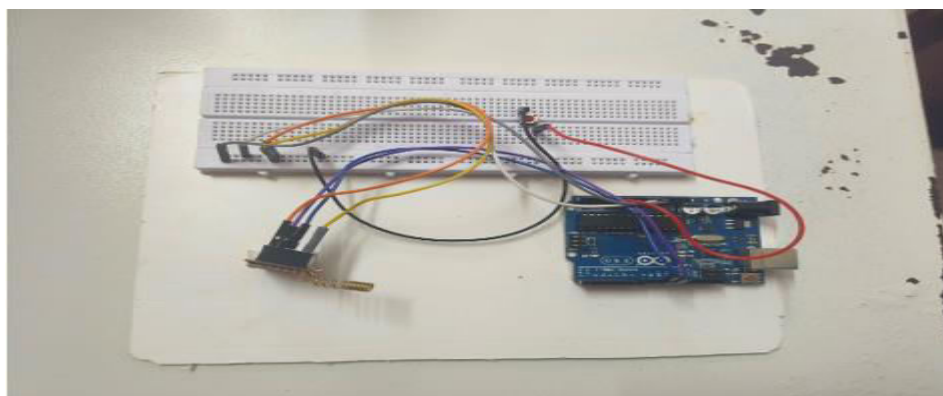


Figure 7.1 – CONNECTION OF ARDUINO BOARD

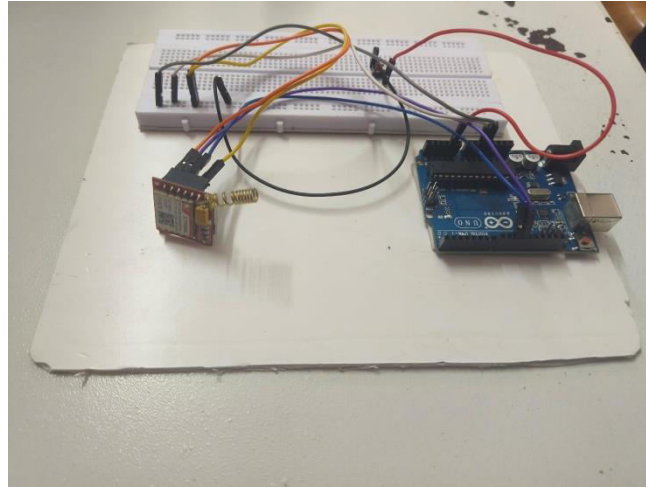


Figure 7.2 – CONNECTION OF SIM MODULE

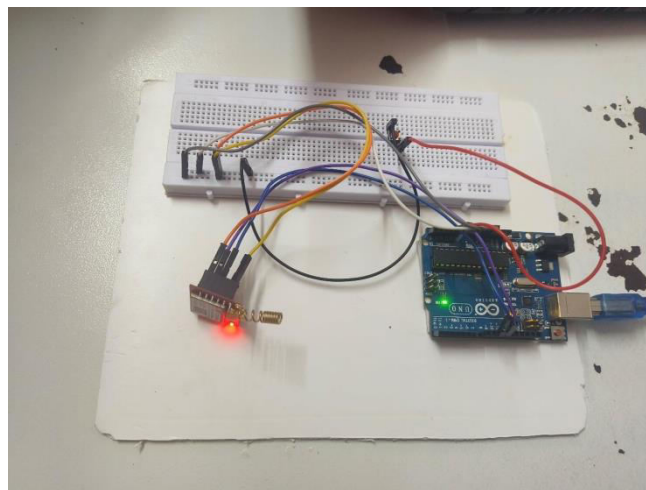


Figure 7.3 –CONNECTION OF ONE BUTTON DIALING

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