**SMART BLOCK DIAGRAM**

SOLENOID LOCK

(12V)

LM358N

OP-AMP

IR SENSOR

BJT (BC547)

OLED

IRLZ44N MOSFET

ACTIVE BUZZER

4X4 KEYPAD

TACTILE BUTTON (X2)

REAL-TIME CLOCK

EEPROM MODULE

SMS

MOBILE PHONE

GSM MODULE

(SIM800L)

BLUETOOTH

MICROCONTROLLER

FINGERPRINT

**POWER SECTION**

12V

5V Components:

* Buzzer
* Fingerprint

5V

3.3V

5V

4.4V

12V

GSM Module

MCU

LM2596 Buck Converter

LM2596 Buck Converter

12V Power Supply

3.3V Components:

* EEPROM
* IR Sensor
* RTC Module
* OLED

**COMPONENTS AND THEIR FUNCTIONS**

* **Keypad**: To input the user’s password
* **IR sensor**: The IR sensor is housed within the smart lock. It is used for detecting when a person tries to tamper with the lock’s mechanism
* **Real-time clock (RTC) module**: To determine date and time
* **EEPROM**: For storing the date and time at which the door is opened and closed as well as attempts to open the door (whether successful or unsuccessful)
* **Bluetooth**: Used as an alternative to the keypad to unlock the door using a password. Can be used to retrieve data stored in the SD card in order to observe the history of opening and closing of the door, as well as the date and time at which those events occurred.
* **GSM module**: For sending SMS alerts to the homeowner whenever unsuccessful attempts are made to open the door or whenever attempts are made to tamper with the lock’s mechanism
* **Buzzer**: To produce loud sounds to ward off intruders
* **Solenoid lock**: Controlled via electricity
* **STM32**: The STM32 is interfaced with other components. It runs the program that operates the smart lock.
* **Backup power**: In the case of power outages
* **Fingerprint scanner**: Another means of access control
* **OLED**: For information display

**TO BE IMPLEMENTED LATER**

* Dual power supply (AC and DC)
* Battery voltage measurement (Querying using Bluetooth)
* Setting the time (via Bluetooth)