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| **Iotronics Techlab Pvt Ltd.** | |
| **Aim:** | To design and implement a Bluetooth-controlled door lock system using IoT development kits. |
| **Requirements:** | 1. Automation Kit 2. Wireless and IoT Kit (for Bluetooth communication) 3. Servo Motor 4. Bluetooth Module (HC-05 or similar) 5. Smartphone with Bluetooth capability 6. Arduino Bluetooth controller App |
| **IDE:** | Arduino IDE |
| **Connection Diagram:** |  |
| **Working** | 1. Bluetooth module establishes communication between Arduino Uno and smartphone. 2. Smartphone app sends lock/unlock commands via Bluetooth. 3. Arduino Uno receives commands and triggers servo motor/solenoid to lock/unlock the door. 4. Door remains locked/unlocked until new command is received. 5. Security features can be implemented, such as password verification or user authentication. |
| **Procedure:** | 1. **Setting Up the Hardware**:    * Connect the Bluetooth module to the Arduino Uno following the provided instructions.    * Connect the servo motor or solenoid lock to the Arduino Uno for door locking mechanism. 2. **Programming the Arduino Uno**:    * Open the Arduino IDE on your computer.    * Write the code to establish Bluetooth communication and control the lock mechanism based on received commands.    * Implement security features if desired, such as password verification. 3. **Mechanical Assembly**:    * Install the servo motor/solenoid lock on the door to act as the locking mechanism.    * Ensure the mechanical setup allows smooth locking and unlocking of the door. 4. **Testing**:    * Power on the Arduino setup.    * Pair your smartphone with the Bluetooth module.    * Test the system by sending lock/unlock commands from the smartphone application. 5. **Finalization**:    * Make any necessary adjustments to the mechanical setup or code for optimal performance.    * Implement any additional security features if desired.    * Document the project for future reference. |
| **CODE:** | #include<Servo.h>  Servo my\_servo;  char incoming\_data ;  String data;  void setup() {   Serial.begin(9600);   my\_servo.attach(8);   my\_servo.write(0);  }  void loop() {     while(Serial.available()>0)   {    delay(1);    String data = Serial.readString();    Serial.println(data);    if((data=="ON")||(data=="Lock")||(data=="LOCK")||(data=="LOCK ")||(data=="Lock ")||(data=="lock ")||(data=="lock"))//Change this line According to your need    {      Serial.println("door close");      my\_servo.write(90);      delay(100);//change delay accroding to your need  //    my\_servo.write(180);//if you want to close the lock automatically then uncomment this line and also adjust delay      }    else if((data=="OFF")||(data=="Unlock")||(data=="UNLOCK")||(data=="UnLock")||(data=="unlock")||(data=="lock ")||(data=="Unlock ")||(data=="UNLOCK ")||(data=="UnLock "))//Change this line According to your need      {      Serial.println("door open");      my\_servo.write(0);      delay(100);      }       }   data="";  } |
| **Result/Output** |  |