OTP BASED SMART WIRELESS LOCKING SYSTEM USING ARDUINO

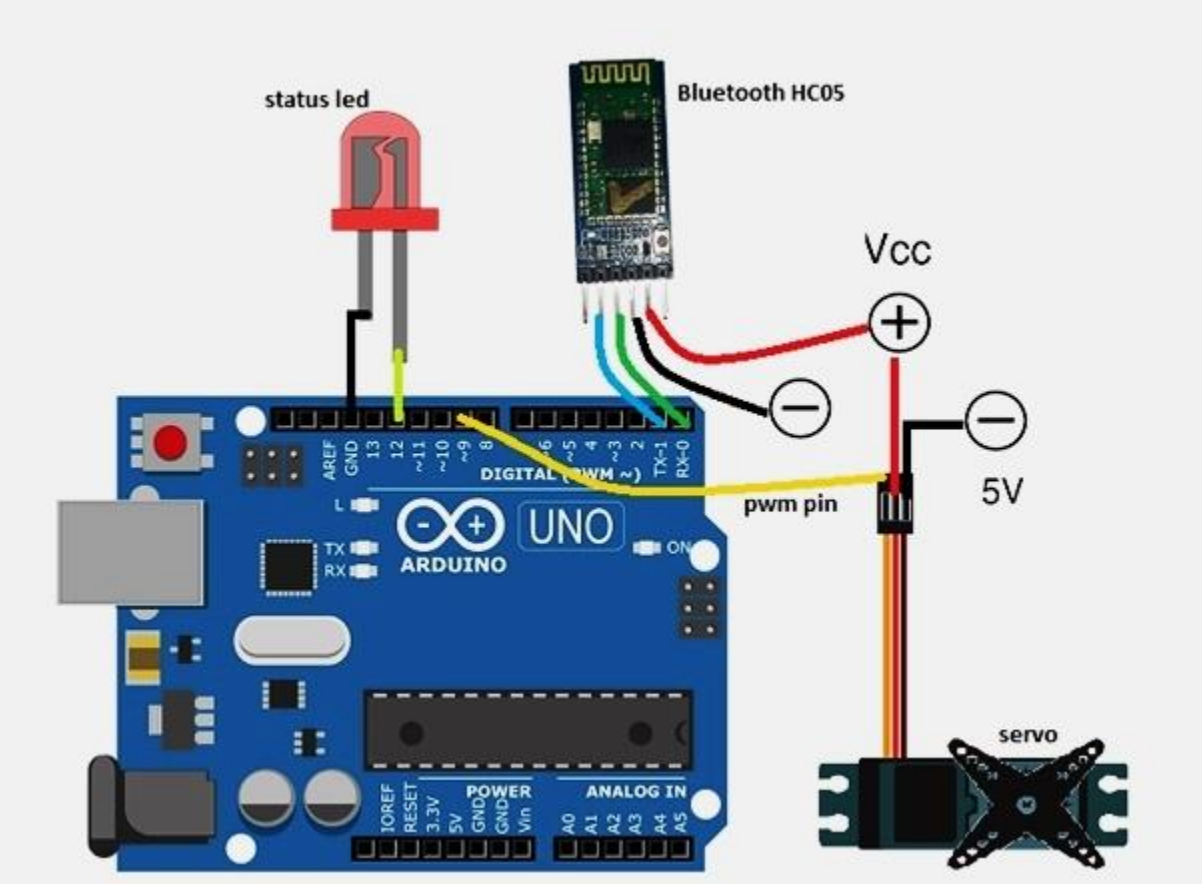
OBJECTIVE OF THE PROJECT

- The objective of the project is to design a smart OTP-based locking system.
- This smart lock can generate a new password every time you unlock it, which further enhances your security level.
- For your safety and security, we bring to you a design of a smart lock that has the capability to remove all these security threats and problems.

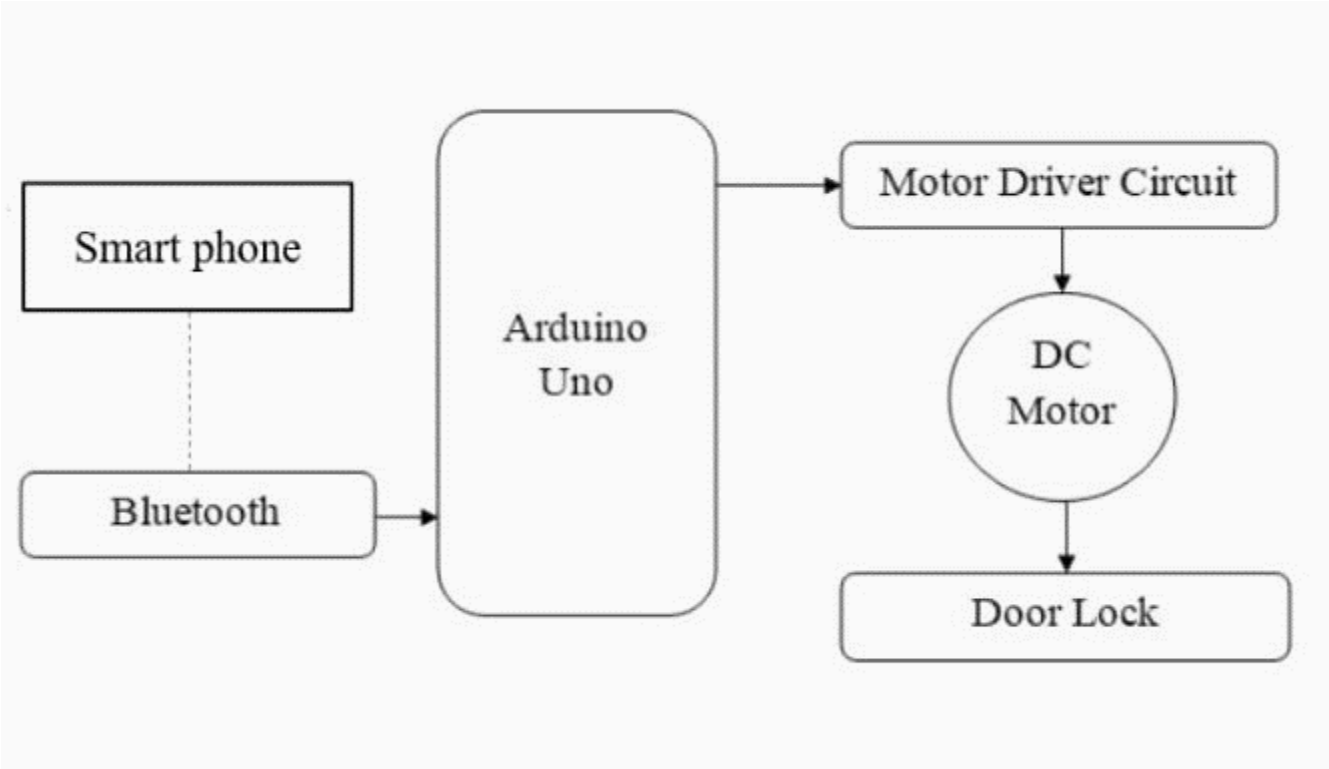
SOCIETAL RELEVANCE

- This new device is much safer than the traditional key-based system and electronic wireless lock system.
- If you are still using the key-based system, you are likely to land in a big problem if your key gets lost or stolen.
- The electronic wireless lock system is not safe either. You might forget the password and there is also a high risk being hacked.
- This new device can enhance your safety level.

CIRCUIT DIAGRAM



BLOCK DIAGRAM



BLOCK DIAGRAM DESCRIPTION

- **Arduino:** It is an open-source platform used for building electronics projects. Arduino consists of both a physical programmable circuit board and a piece of software, or IDE (Integrated Development Environment) that runs on your computer, used to write and upload computer code to the physical board.
- **Bluetooth:** A Bluetooth module is a short range device of around 10 meters which provides both sound and data transmission.

BLOCK DIAGRAM DESCRIPTION

- **MIT app inventor:**App Inventor for Android is an open-source web application originally provided by Google, and now maintained by the Massachusetts Institute of Technology (MIT)
- **Servo motor:**A servomotor is a rotary actuator that allows for precise control of angular position, velocity and acceleration

COMPONENT DETAILS

Component Name	Quantity	Description	Cost Approx. In INR
Arduino Uno	1	For Programing	300
Micro Servo motor	1	To Unlocking movement	200
Bluetooth HC 05	2	Tsend OTP	300
Wires	20cm	For Connection	10
Battery	1	5 to 12v	30
Total Cost			**840**

```
#include <Servo.h>
String dicid;
String pwd;
String letters[6] = {"adv", "fdfdb", "fdfc", "fdfd", "efdf",
"fmbff"};
String otpp = "";
String numbers[4]={"3213", "213213", "9999",
"543646"};
int sled1=12;
int sled2=13;
Servo myservo;
void setup() {
  // put your setup code here, to run once:
Serial.begin(9600);
myservo.attach(9);
pinMode(sled1,1);
pinMode(sled2,1);
}
```

```
void loop() {
  // put your main code here, to run
repeatedly:
while (Serial.available()==0);
dicid=Serial.readStringUntil('\n');
if (dicid== "asdfg"){
  otp();
  digitalWrite(sled1,1);
}
check();

}

void otp(){
    otpp =  letters[random(0, 6)] + numbers
[random(0, 4)] ;
  Serial.println(otpp+"\n");

}
```

```
void check(){
  while (Serial.available()==0);
 pwd=Serial.readStringUntil('\n');

if (pwd == otpp ){
  Serial.println ("unlocked");
  myservo.write(120);
  digitalWrite(sled2,1);
  digitalWrite(sled1,0);
}
if (pwd != otpp ){
  Serial.println ("reset try again");
  myservo.write(50);
  digitalWrite(sled2,0);
  digitalWrite(sled1,1);
}
}
```

WORKING OF THE PROJECT

- First, connect the Arduino and componenets to power supply.
- Here I have used 5V Power Bank for it. Next open the installed App, then turn on the Bluetooth of the phone.
- When you tap on the Bluetooth icon, you will get the list of Bluetooth connections for pairing. Now, tap on HC 05. On successful pairing, you will get a ‘connected’ message on the App

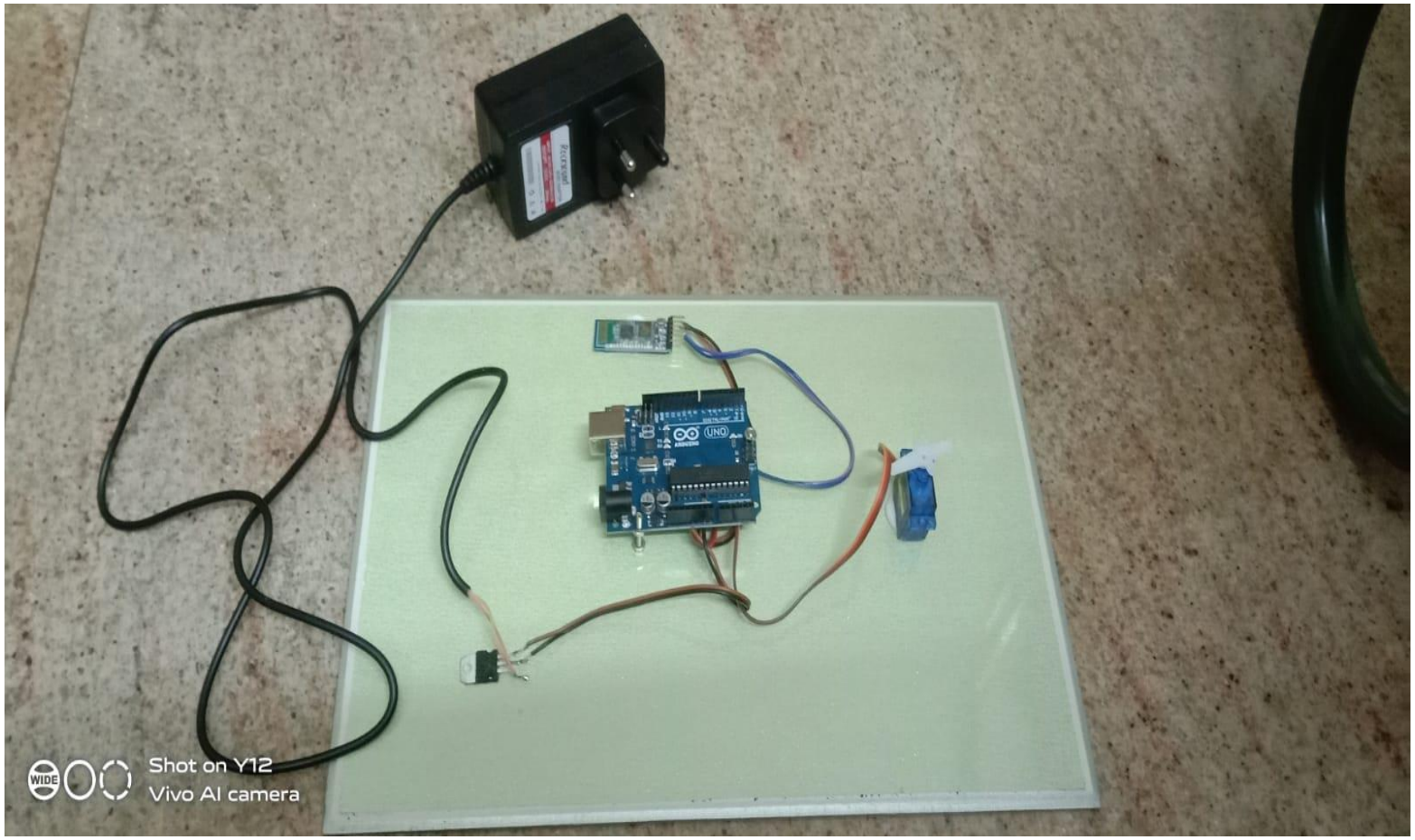
WORKING OF THE PROJECT

- After that, tap on the key icon to send device id to match. If the device id is matched, it will send an OTP to your app that you can see in App text bar between Bluetooth and lock icon.
- Now, you can tap on the lock icon to unlock your Smart Lock. If everything is ok then servo moves unlocking mechanism and onboard LED of Arduino lights up indicating successful unlock.

OUTCOME OF THE PROJECT

- This new device is much safer than traditional systems.If you are still using the key-based system,the key may get lost or stolen.
- The electronic wireless lock system is not safe either. You might forget the password and there is also a high risk being hacked .
- For your safety and security, we bring to you a design of a smart lock that has the capability to remove all these security threats.

Project Layout



Thank you