



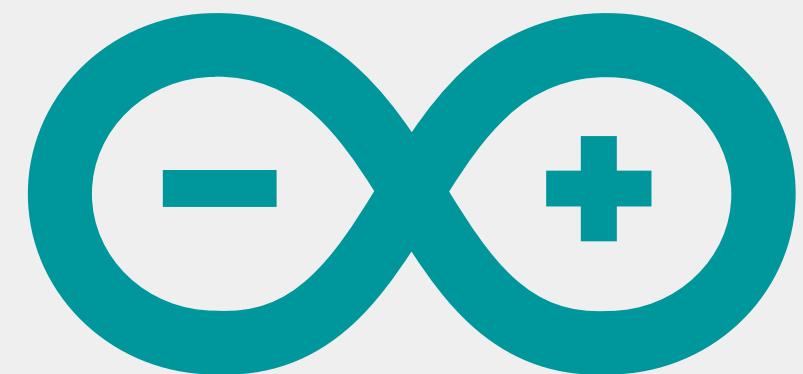
EMBEDDED SYSTEMS MINI PROJECT

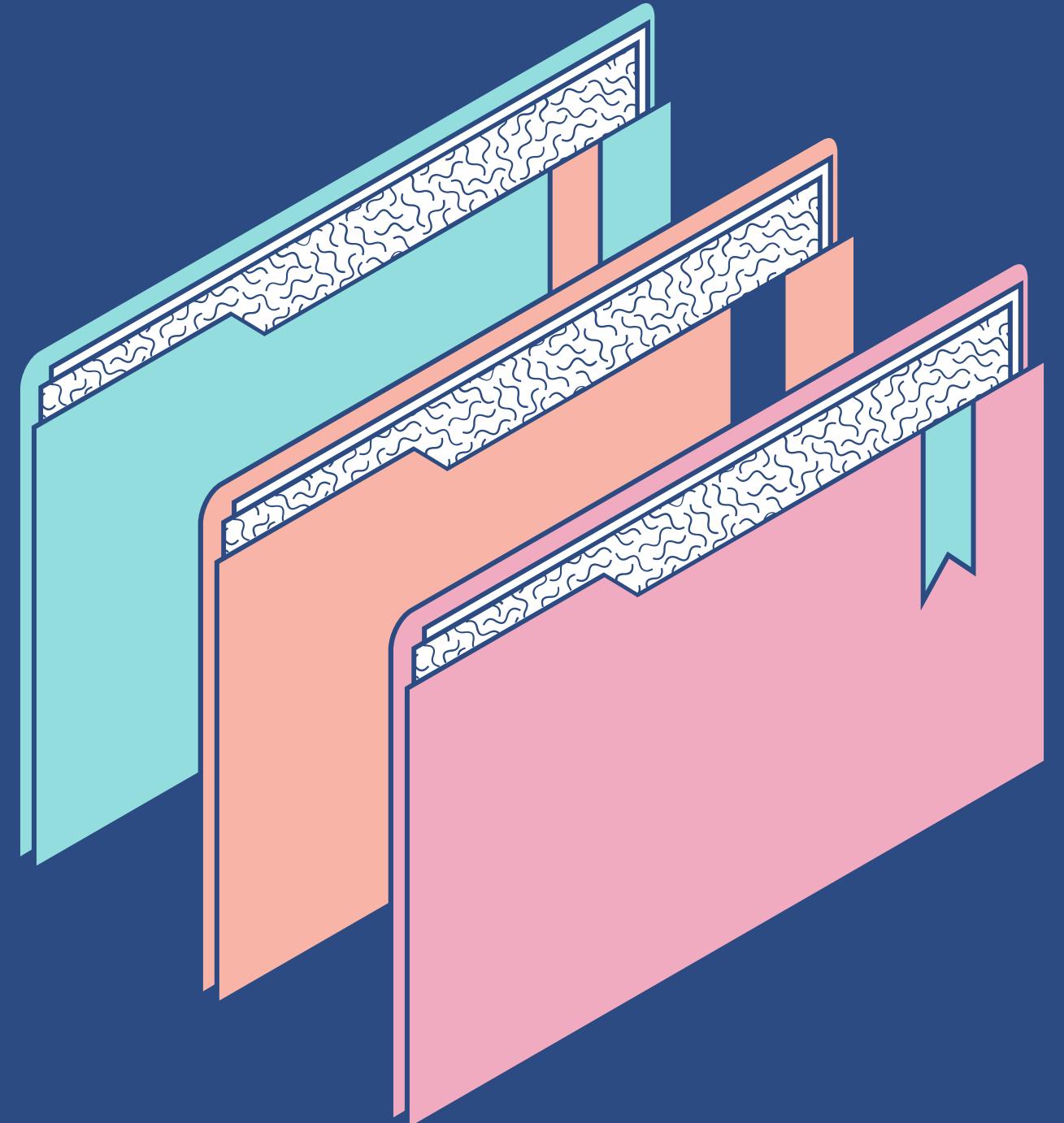
# Combination Lock

Using Arduino to enable home  
automation

# Abstract

The microcontroller Arduino Uno is used to modernize basic electrical and electronics appliances by adding logic to them. In this project, we've attempted to demonstrate how the microcontroller is interfaced with a door lock to enable home automation. The C language is used to program the microcontroller. This project remotely showcases the compute capabilities of Arduino whilst dealing with multiple devices at once.





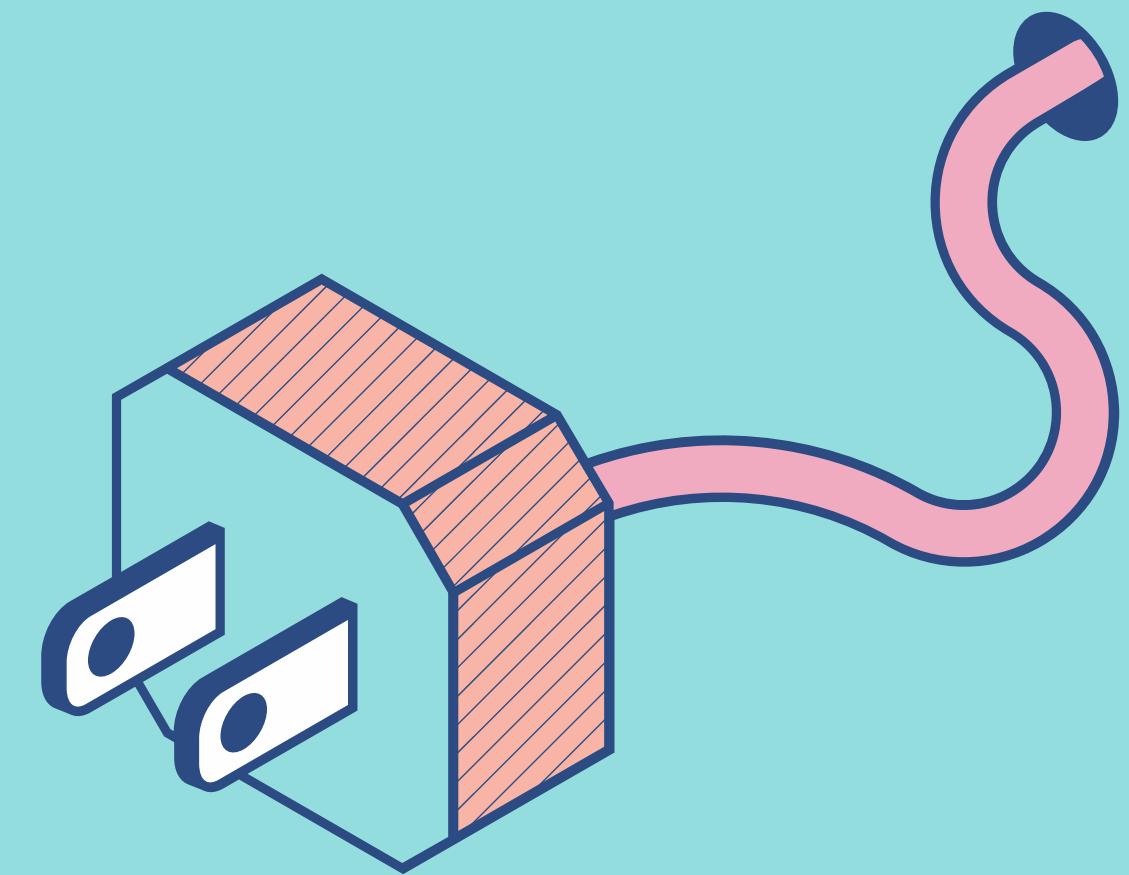
# Agenda

KEY TOPICS DISCUSSED  
IN THIS PRESENTATION

- The working of the door lock
- Setting up the components
- Model build on tinkercad
- Testing model on tinkercad
- Use cases

# The Working Of The Project

The project will help us to set combination password and you can set password by using 1-6 digits, When you will push the buttons, and the combination is matched the green LED will be turned on and if the combination is not matched the Red LED will indicate that the password is wrong.



# Procedure to build the model

1 ————— 2 ————— 3 ————— 4 ————— 5

## STEP

**Research about the components available**

Study the system so you can maximize its use.

## STEP

**List the components to build your idea**

Stay prepared and know how to use the materials.

## STEP

**Build the model on tinkercad**

Use the necessary tools to manage your time well.

## STEP

**Write the code for the Arduino uno**

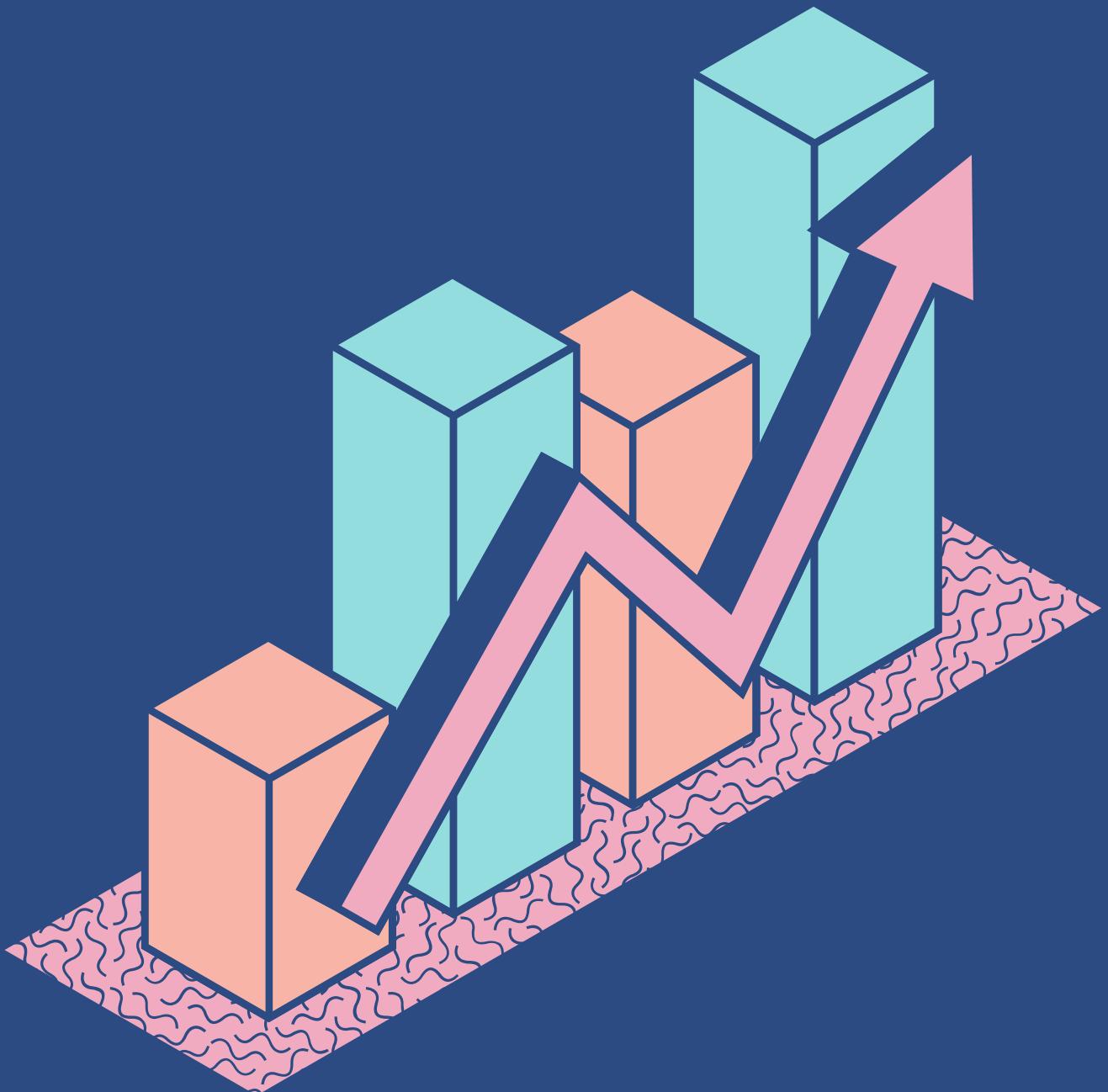
Write clean and well-documented code.

## STEP

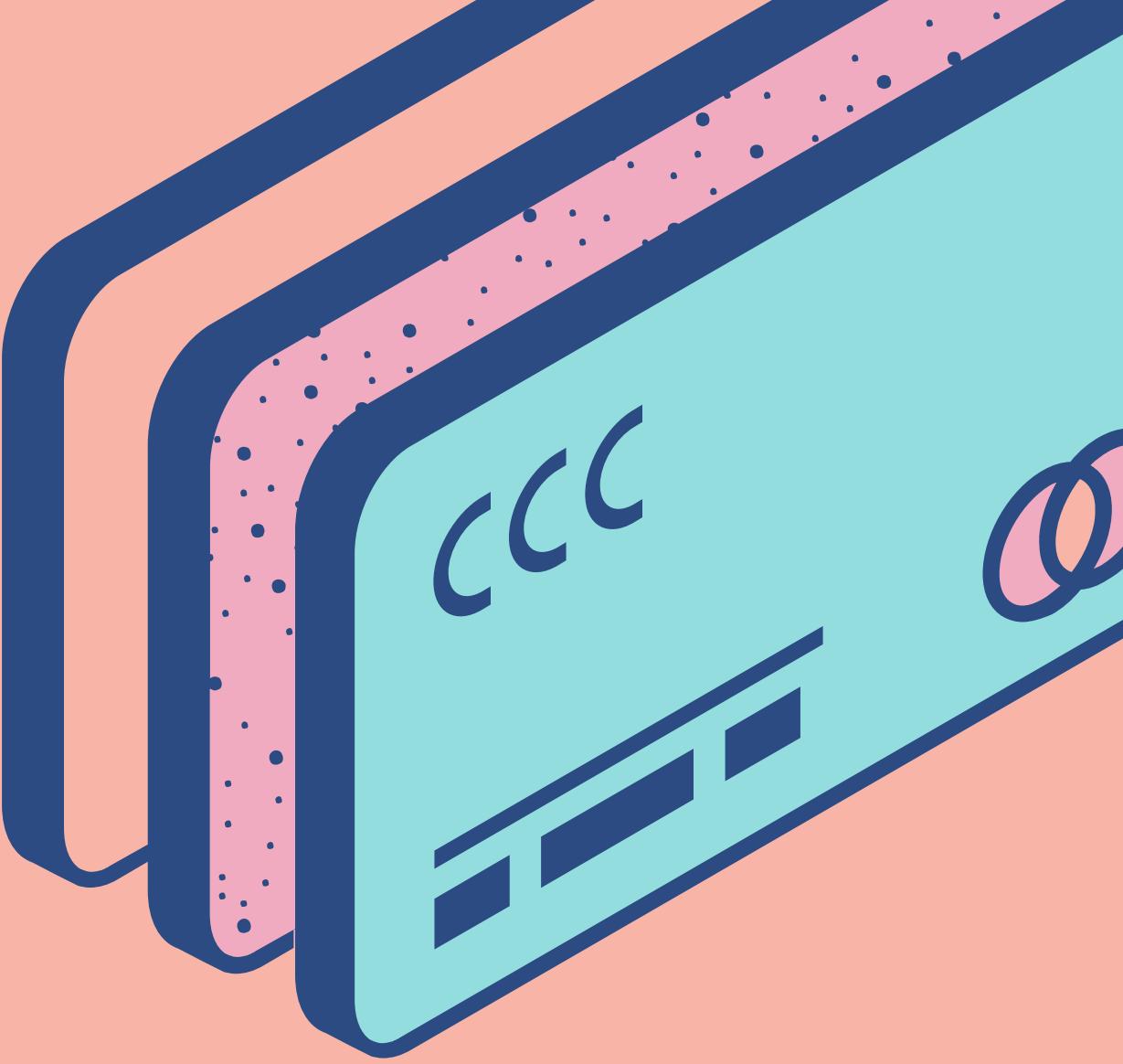
**Simulate the model**

Simulate the model to test out the features.

# COMPONENTS USED



- **Arduino Uno**
- **Digital push-button**
- **LED**
- **Breadboard**
- **Connecting wires**
- **soldering iron (optional)**



# About the Components

## Arduino Uno

The Arduino Uno is an open-source microcontroller board based on the Microchip ATmega328P microcontroller and developed by Arduino.cc.

## Push button

Button with `on` and `off` states.

## LED

Visual indication of operations performed

## Breadboard

Workspace to implement all components



# Working

The project will help us to set combination password and you can set password by using 1-6 digits, When you will push the buttons, and the combination is matched the green LED will be turned on and if the combination is not matched the Red LED will indicate that the password is wrong.



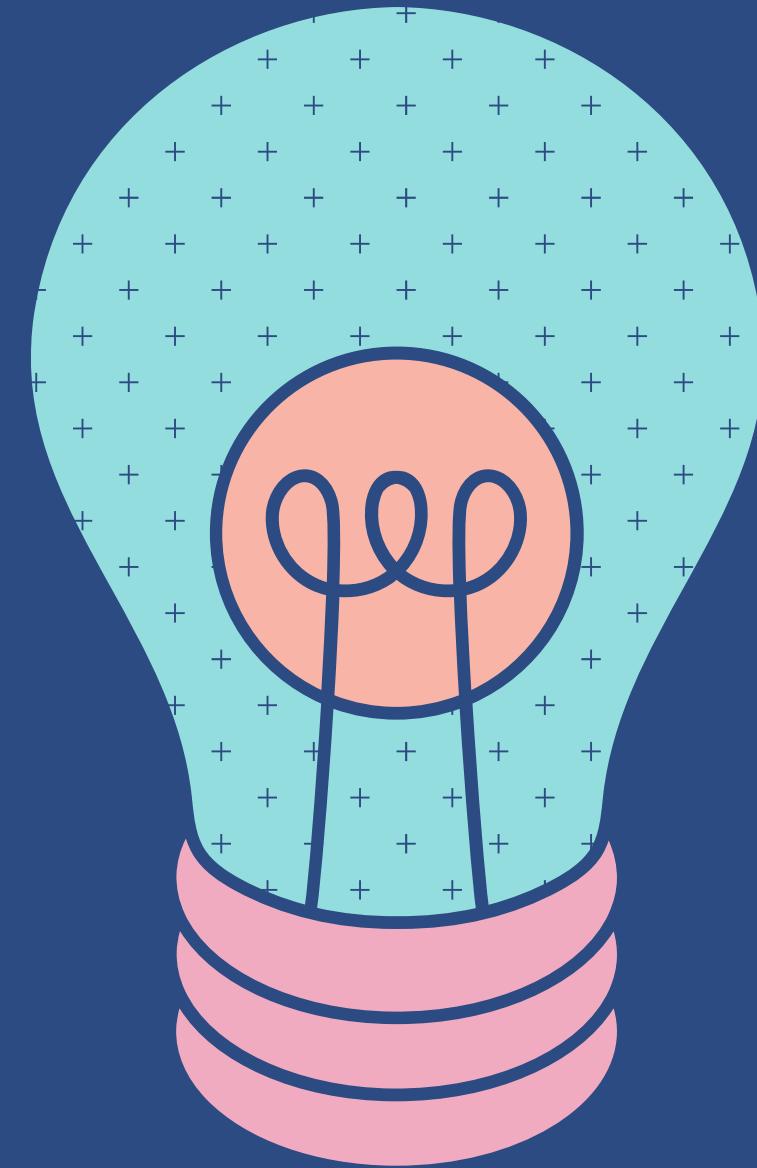
The push buttons can be interfaced by arduino using pull down configuration i.e. button will give 5V when pressed and 0V when released and pull up configuration i.e. when button is pressed it will give 0V and when released it will give 5V. We are using pull up configuration and we are not using any external resistor instead we are using arduino internal pull up resistor.



## Change Combination Passworrd

- You can change the combination password from Arduino code, open the code and find the following line,
- `int code[] = {6,5,5,4,3,2};`
- and change the sequence, for now, you will have to press 6th button followed by 5, again 5, 4, 3 and then 2 and your Green LED should be on.

**Hence, we can use arduino and  
push buttons as combination  
lock you can use that to secure  
your door or any other thing**



# Do you have any questions?

Send it to us! We hope you learned  
something new.

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