Assignment - 1

Assignment Date	19 September 2022
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Maximum Marks	2 Marks

Home Automation System using Tinkercad

Program :

```
#include <Keypad.h>
#include <LiquidCrystal.h>
#include <Servo.h>
#define Password_Length 5
Servo myservo;
LiquidCrystal lcd(A0, A1, A2, A3, A4, A5);
int pos = 0;
char Data[Password_Length];
char Master[Password_Length] = "7890";
byte data_count = 0, master_count = 0;
bool Pass_is_good;
bool door = false;
char customKey;
const byte ROWS = 4;
const byte COLS = 4;
char keys[ROWS][COLS] = {{'1', '2', '3', 'A'},{'4', '5', '6', 'B'},{'7', '8', '9', 'C'},{'*', '0', '#', 'D'}};
byte rowPins[ROWS] = {0, 1, 2, 3};
byte colPins[COLS] = {4, 5, 6, 7};
Keypad customKeypad( makeKeymap(keys), rowPins, colPins, ROWS, COLS);

void setup()
{
  myservo.attach(9, 2000, 2400);
  ServoClose();
```

```
 lcd.begin(16, 2);
 lcd.print("Protected Door");
 loading("Loading");
 lcd.clear();
}

void loop()
{
 if (door == true)
 {
  customKey = customKeypad.getKey();
  if (customKey == '#')
  {
   lcd.clear();
   ServoClose();
   lcd.print("Door is closed");
   delay(3000);
   door = false;
  }
 }
 else
  Open();
}

void loading (char msg[]) {
 lcd.setCursor(0, 1);
 lcd.print(msg);
 for (int i = 0; i < 9; i++) {
  delay(1000);
  lcd.print(".");
 }
```

```
}

void clearData()
{
  while (data_count != 0)
  {
    Data[data_count--] = 0;
  }
  return;
}

void ServoClose()
{
  for (pos = 90; pos >= 0; pos -= 10) {
    myservo.write(pos);
  }
}

void ServoOpen()
{
  for (pos = 0; pos <= 90; pos += 10) {
    myservo.write(pos);
  }
}

void Open()
{
  lcd.setCursor(0, 0);
  lcd.print("Enter Password");
  customKey = customKeypad.getKey();
  if (customKey)
```

```
{
  Data[data_count] = customKey;
  lcd.setCursor(data_count, 1);
  lcd.print(Data[data_count]);
  data_count++;
}

if (data_count == Password_Length - 1)
{
  if (!strcmp(Data, Master))
  {
    lcd.clear();
    ServoOpen();
    lcd.print(" Door is Open ");
    door = true;
    delay(5000);
    loading("Waiting");
    lcd.clear();
    lcd.print(" Time is up! ");
    delay(1000);
    ServoClose();
    door = false;
  }
  else
  {
    lcd.clear();
    lcd.print(" Wrong Password ");
    door = false;
  }
  delay(1000);
  lcd.clear();
```

```
    clearData();
  }
}
```

Simulation Diagram :