

Problem Statement

Make an automation circuit. It becomes a tedious task to perform a set number of use cases in the office each morning, so we want you to create a circuit that can do the following:

- Open up the motorized shades of the office.
- Trigger the lights on with the help of a relay one by one (total lights 5).
- Use a force sensor underneath the entrance mat to check if someone enters; if so, it has to keep the sanitizer motor on for 5 seconds.
- You can use 3 different controllers for all three of them.

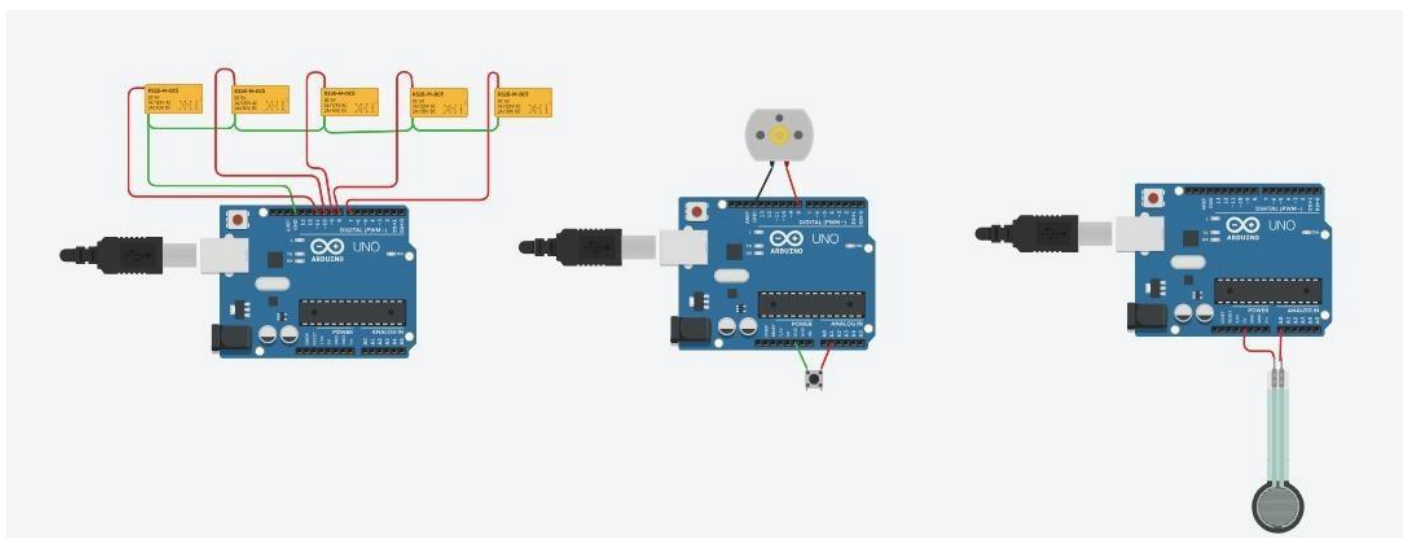
Step 1: Understanding: Arduino Connection & Use of 5 relays, motor, switch button, force sensor, delays. Step 2: Ideating

Create a circuit using three microcontrollers: one to automate motorized shades, another to sequentially activate five office lights via relays, and the third to use a force sensor under an entrance mat to turn on a sanitizer motor for 5 seconds when triggered. Step 3: Leds increases and setup environment.

Step 3: motor rotates, when force sensor on it will sanitize for 5 seconds delay. sequencing leds glow one by one.

Step 4:

Circuit:



Code://Motorized shades control

```
const int motorPin = 3; // Relay connected to motor control
```

```
void setup() {
```

```
  pinMode(motorPin, OUTPUT);
```

```
}
```

```
void loop() {
```

```
  // Open shades in the morning  digitalWrite(motorPin, HIGH);
```

```
  // Activate motor to open shades  delay(5000); // Run motor for
```

```
  5 seconds (adjust as needed)  digitalWrite(motorPin, LOW); //
```

```
  Stop motor  delay(86400000); // Wait for 24 hours (1 day)
```

```
}
```

```
// Sequential Lighting Control const int lightPins[] = {4, 5, 6, 7,
```

```
8}; // Relays connected to lights const int numLights = 5;
```

```
void setup() {  for(int i = 0; i <
```

```
  numLights; i++) {
```

```
  pinMode(lightPins[i], OUTPUT);
```

```
  }
```

```
}
```

```
void loop() {  for(int i = 0; i < numLights; i++) {
```

```
  digitalWrite(lightPins[i], HIGH); // Turn on each light sequentially
```

```
  delay(1000); // 1-second delay between each light (adjust as needed)
```

```
}  
delay(86400000); // Keep lights on for 24 hours (or adjust as needed)  
}
```

```
// Entrance Sensor and Sanitizer Motor Control const int
```

```
sensorPin = A0; // Force sensor connected to analog pin const
```

```
int motorPin = 9; // Motor for sanitizer int threshold = 100; //
```

```
Threshold value for detecting presence
```

```
void setup() {
```

```
  pinMode(motorPin, OUTPUT);
```

```
  Serial.begin(9600);
```

```
}
```

```
void loop() {  int sensorValue = analogRead(sensorPin); // Read
```

```
the sensor value
```

```
  Serial.println(sensorValue);
```

```
  if (sensorValue > threshold) {    digitalWrite(motorPin,  
HIGH); // Turn on sanitizer motor    delay(5000); // Keep  
motor on for 5 seconds    digitalWrite(motorPin, LOW); //
```

```
Turn off motor
```

```
  }  delay(100); // Small delay for  
stability
```

```
}
```