

AR17 박해주 AR21 윤지훈

## CONTENTS

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이번 프로젝트에서는 LED를 이용해서 간단한 순발력 게임을 만들어보겠습니다.

일렬로 나열된 5개의 LED 에 불이 순차적으로 왼쪽에서 하나씩 들어오게 됩니다. 이때 3번째 LED 에 불이들어왔을 때 스위치를 누르게 되면 점수를 얻게 되는 게임입니다. LED가 켜지는 속도는 다음단계로 넘어갈수록 점점 빨라집니다.



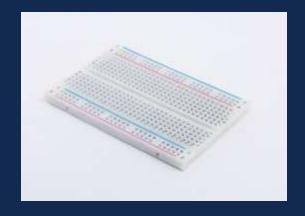


아두이노uno보드

브레드보드

lcd







스위치

led

저항

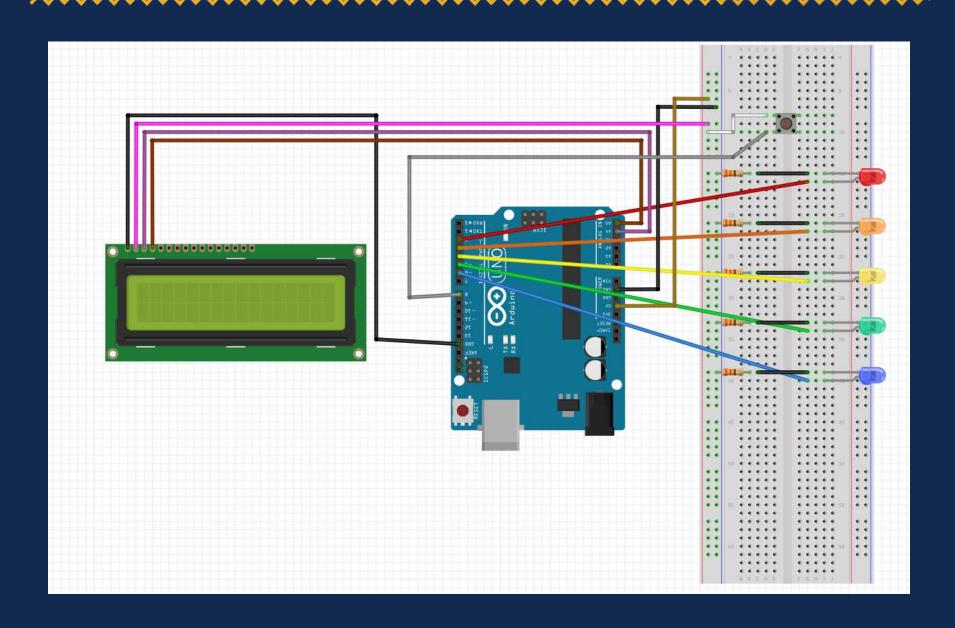
















```
#include <Wire.h>
#include <LiquidCrystal_I2C.h>
LiquidCrystal I2C Icd(0x27, 16, 2);
//LED pins
int Led1 = 20
int Led2 = 3;
int Led3 = 4:
int Led4 = 5;
int Led5 = 6;
//Button pin
int Btn = 8;
boolean btn prv = LOW; //to check button's change
int Light ptr = 0; //pointer of lightning led
int led_delay = 1000; //delay time to turn on next LED
long lastTime = millis();//to check time change
int score = \Pi:
void newGame(){
    score = 0;
    Light_ptr = 0;
    led_delay = 1000;
    lcd.clear();
    lcd.print("NewGame Score:0");
}
```

```
void move(int ptr){
    digitalWrite(Led1, LOW);
    digitalWrite(Led2, LOW);
    digitalWrite(Led3, LOW);
    digitalWrite(Led4, LOW);
    digitalWrite(Led5, LOW);
    if(ptr == 1) ptr = Led1;
    else if(ptr == 2) ptr = Led2;
    else if(ptr == 3) ptr = Led3;
    else if(ptr == 4) ptr = Led4;
    else if(ptr == 5) ptr = Led5;
    else return;
    digitalWrite(ptr. HIGH);
```

```
void setup(){
   lcd.init();
   lcd.backlight();
 // 메세지를 표시한다.
   lcd.print("Arduino Project");
   Lcd.setCursor(0.1);
   lcd.print("AR17 AR21");
 // 3초동안 메세지를 표시한다.
   delay(3000);
   newGame();
   pinMode(Led1, OUTPUT);
   pinMode(Led2, OUTPUT);
   pinMode(Led3, OUTPUT);
   pinMode(Led4, OUTPUT);
   pinMode(Led5, OUTPUT);
   pinMode(Btn, OUTPUT);
```

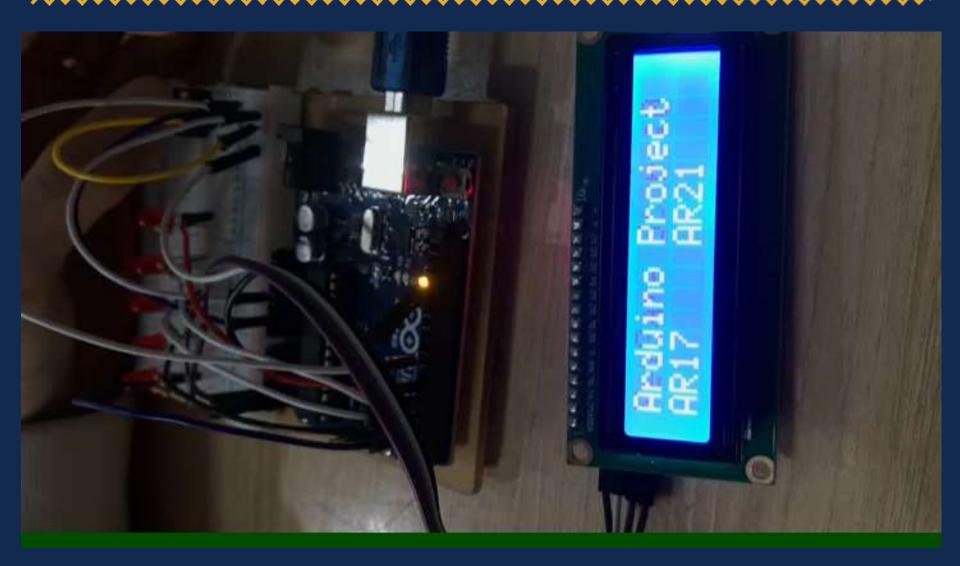
```
void loop(){
   //sequential flashing
    if(millis() - lastTime >= led delay){
        lastTime = millis();
       Light_ptr++;
       if(Light_ptr >= 6) Light_ptr = 1;
        move(Light_ptr);
   //case of button is bushed
    btn_prv = digitalRead(Btn);
    if(digitalRead(Btn) == HIGH && btn_prv == LOW){
        if(Light_ptr == 3){//case succeed
           //blink
            move(0)://turn off
            delay(50);
            move(3);//turn on 3rd
            //make faster (decrease delay)
           if(led_delay > 700)
                                        led_delay -= 100;
                                        led_delay -= 50;
            else if(led_delay > 500)
            else if(led delay > 300)
                                        led_delay -= 25;
            else if(led_delay > 10)
                                        led_delay -= 10;
            else if(led_delay > 1)
                                        led delay -= 1;
```

```
//set_score
    score = 1000-led_delay;
    lcd.clear();
    lcd.setCursor(0,0);
    lcd.print("Game Score : ");
    lcd.setCursor(0.1);
    lcd.print(score);
}
else{//case failed
    //print result via consol
    lcd.clear();
    lcd.print("GAME OVER");
    delay(3000);
    lcd.clear();
    lcd.setCursor(0,0);
    lcd.print("Final Score : ");
    lcd.setCursor(0,1);
    lcd.print(score);
    //blinking
    for(int x=0; x<10; x++){
        if(x\%2 ==0) move(0);
        else move(Light_ptr);
        delay(200);
    }
```

```
//show score value via LED
if(score != 0){
    move(1):
    delay(500);
}
if(score > 200){
    digitalWrite(Led2, HIGH);
    delay(500);
}
if(score > 400){
    digitalWrite(Led3, HIGH);
    delay(500);
if(score > 750){
    digitalWrite(Led4, HIGH);
    delay(500);
if(score > 900){
    digitalWrite(Led5, HIGH);
    delay(500);
}
delay(3000);
newGame();
```







## 감사합니다.

