<https://tutorialslink.com/library/Arduino-Experiments-Guide/20-Random-LED-Patterns-using-Arduino/17/353?ap=1>

void setup()

{

for (int pin = 2; pin <= 12; pin++)

{

pinMode(pin,OUTPUT);

}

}

//Main Loop - Switches different LED Patterns

void loop()

{

int pickme = random(1,20); // picks a random pattern of LED patterns

switch(pickme)

{

case 1:

onrun(random(20,50));

break;

case 2:

alternate(random(80,100));

break;

case 3:

offrun(random(20,50));

break;

case 4:

stack(random(30,50));

break;

case 5:

chaser(random(80,100));

break;

case 6:

fadealter(random(80,100));

break;

}

}

void clearall()

{

for (int pin = 2; pin <= 19; pin++)

{

digitalWrite(pin,LOW);

}

}

void fillall()

{

for (int pin = 2; pin <= 19; pin++)

{

digitalWrite(pin, HIGH);

}

}

//One ON LED Run and all other OFF

void onrun(int delaytime)

{

for(int pin = 2; pin <= 19; pin++)

{

clearall();

digitalWrite(pin, HIGH);

delay(delaytime);

}

for(int pin = 18; pin >= 2; pin--)

{

clearall();

digitalWrite(pin, HIGH);

delay(delaytime);

}

}

//One OFF LED Run and all other OFF

void offrun(int delaytime)

{

for(int pin = 2; pin <= 19; pin++)

{

fillall();

digitalWrite(pin, LOW);

delay(delaytime);

}

for(int pin = 18; pin >= 2; pin--)

{

fillall();

digitalWrite(pin, LOW);

delay(delaytime);

}

}

//Flashing all LEDs ON and OFF

void flash(int delaytime)

{

for(int i = 1; i <=20; i++)

{

clearall();

delay(delaytime);

fillall();

delay(delaytime);

}

}

//Flashing LED in Fade manner

void fadeflash(int delaytime)

{

clearall();

int newdelay = delaytime / 5;

for(int fade = 0; fade <= 255; fade += 5)

{

for(int pin = 2; pin <= 19; pin++)

{

analogWrite(pin, fade);

}

delay(newdelay);

}

for(int fade = 255; fade >= 0; fade -= 5)

{

for(int pin = 2; pin <= 19; pin++)

{

analogWrite(pin, fade);

}

delay(newdelay);

}

}

//Alternatively Fade & Brightens

void fadealter(int delaytime)

{

clearall();

int newdelay = delaytime / 5;

for(int fade = 0; fade <= 255; fade += 5)

{

for(int i = 2; i <= 18; i+=2)

{

analogWrite(i, fade);

}

for (int j = 3; j <= 19; j += 2)

{

analogWrite(j, 255-fade);

}

delay(newdelay);

}

for(int fade = 255; fade >= 0; fade -= 5)

{

for(int i = 2; i <= 18; i+=2)

{

analogWrite(i, fade);

}

for (int j = 3; j <= 19; j += 2)

{

analogWrite(j, 255-fade);

}

delay(newdelay);

}

}

//Alternate Flash - Similar to Flash but alternate LEDs

void alternate(int delaytime)

{

for (int n = 1; n <= 5; n++)

{

clearall();

for (int i = 2; i <= 18; i += 2)

{

digitalWrite(i, HIGH);

}

delay(delaytime);

clearall();

for (int j = 3; j <= 19; j += 2)

{

digitalWrite(j, HIGH);

}

delay(delaytime);

}

}

//Putting all LEDs one by one in a stack

void stack(int delaytime)

{

int stack = 0;

while(stack < 18)

{

for(int pos = 2; pos <= (19 - stack); pos++)

{

clearall();

digitalWrite(pos, HIGH);

drawstack(stack);

delay(delaytime);

}

stack++;

}

}

//Subfunction of the stack function

void drawstack(int stack)

{

for(int n = 19; n > (19 - stack); n--)

{

if(n >= 2)

{

digitalWrite(n, HIGH);

}

}

}

//One LED chases another LED front and back

void chaser(int delaytime)

{

int div = 40;

int flashtime = delaytime / div;

int A = random(2,7);

int B = random(7,12);

int Av = 1;

int Bv = 1;

if(random(0,2))

{

Av \*= -1;

}

if(random(0,2))

{

Bv \*= -1;

}

for(int time = 1; time < 100; time++)

{

if(abs(A-B) == 1 && (Av\*Bv) == -1)

{

for(int f = 1; f < round(div/4); f++)

{

clearall();

delay(flashtime);

digitalWrite(A, HIGH);

digitalWrite(B, HIGH);

delay(flashtime);

}

Av \*= -1;

Bv \*= -1;

A += Av;

B += Bv;

}

else

{

clearall();

digitalWrite(A, HIGH);

digitalWrite(B, HIGH);

A += Av;

B += Bv;

delay(delaytime);

}

if(A < 2)

{

A = 3;

Av \*= -1;

}

if(B > 19)

{

B = 18;

Bv \*= -1;

}

if(A >= B)

{

A = B-1;

}

}

}