Date : 07/03/2022

CSLR61 : EMBEDDED SYSTEMS
LAB-5

Roll no. : **106119100**

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Section : **CSE-B**

1. Blink Led In Arduino UNO Simulator using Tinkercad

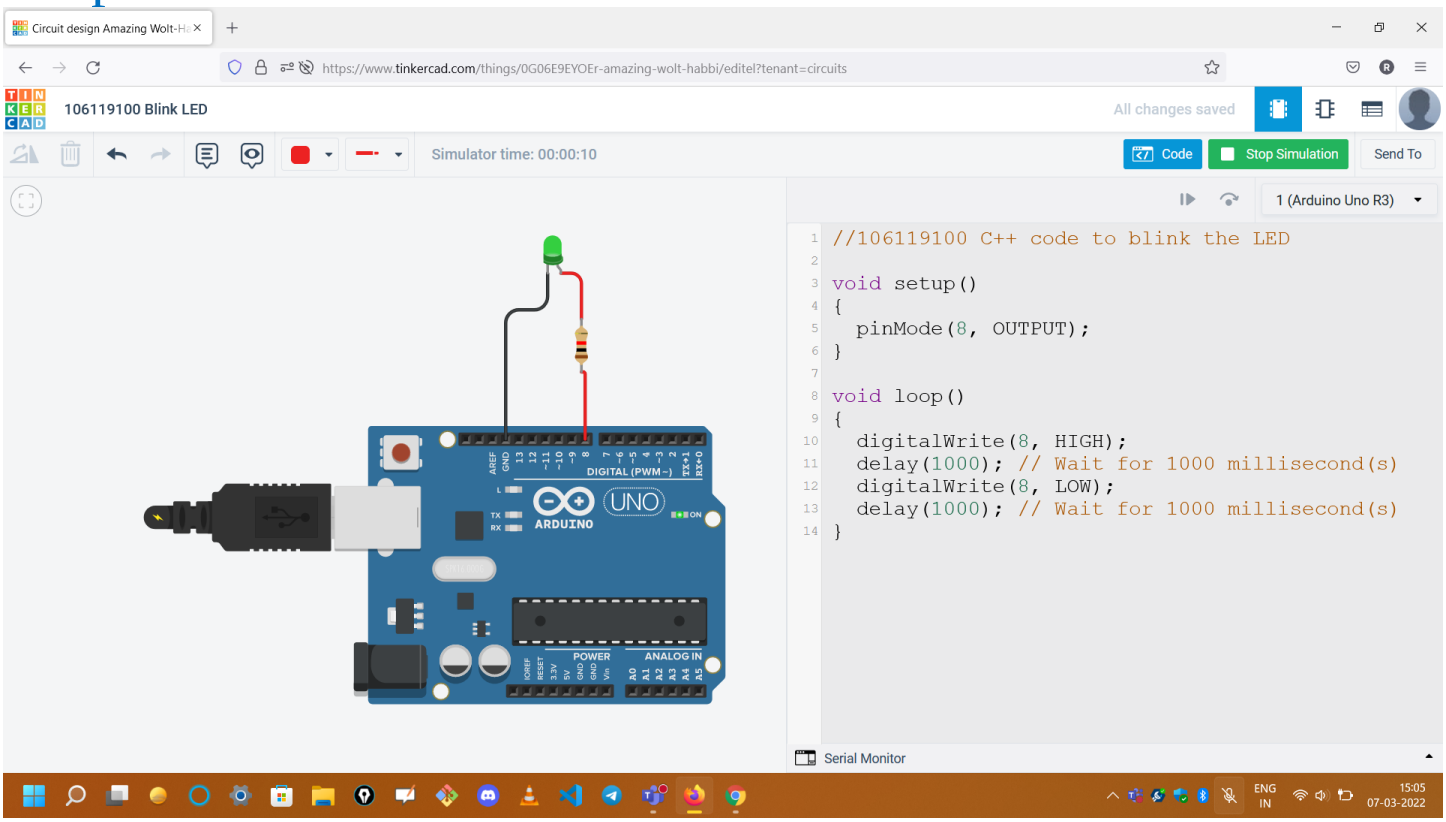
Code

```
// 106119100 C++ code to blink the LED

void setup(){
    pinMode(8, OUTPUT);
}

void loop(){
    digitalWrite(8, HIGH);
    delay(1000); // Wait for 1000 millisecond(s)
    digitalWrite(8, LOW);
    delay(1000); // Wait for 1000 millisecond(s)
}
```

Output

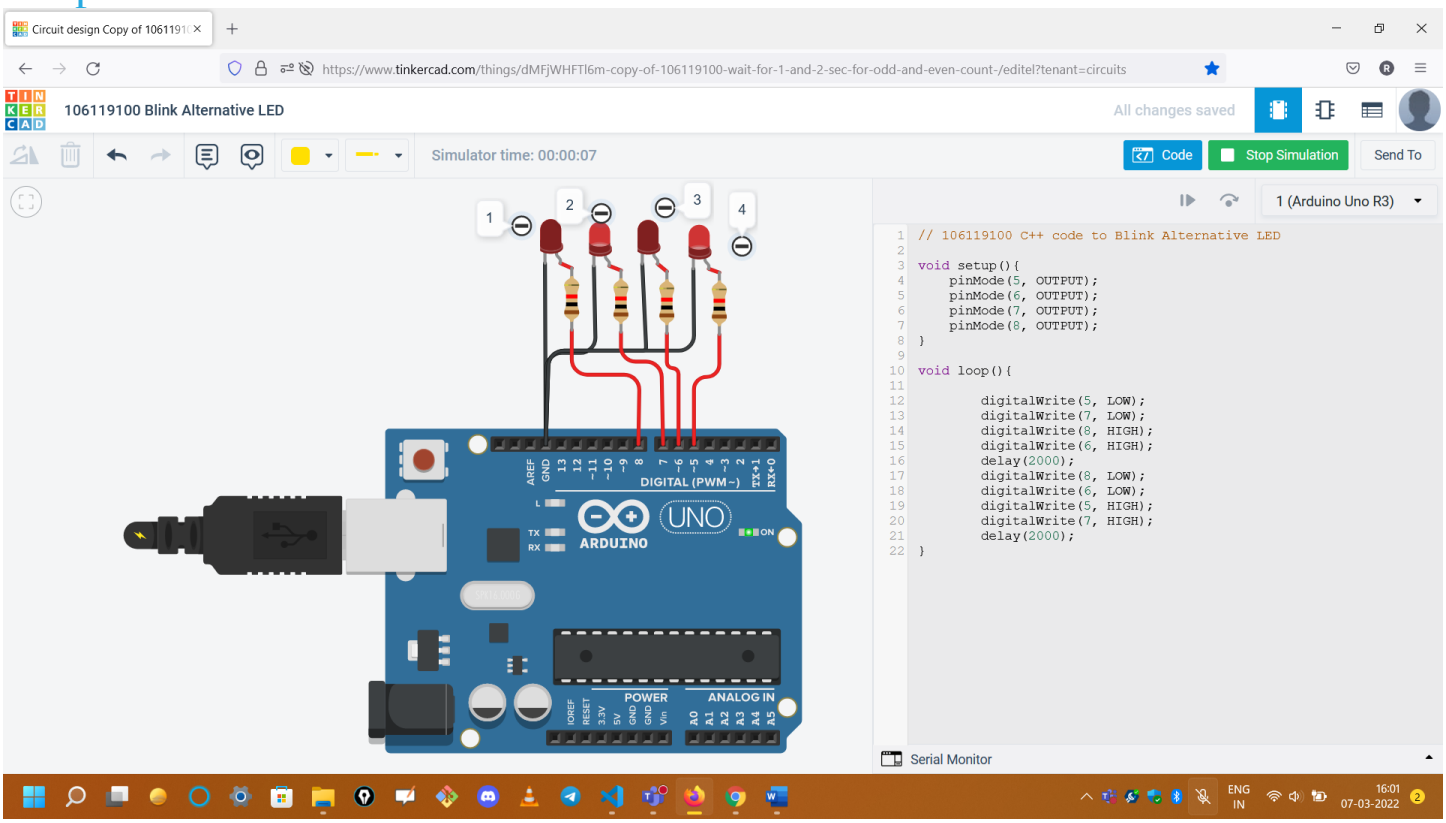


2. Blink LEDs in alternate order – 1 and 3 together and 2 and 4 together.

Code:

```
// 106119100 C++ code to Blink Alternative LED
void setup(){
    pinMode(5, OUTPUT);
    pinMode(6, OUTPUT);
    pinMode(7, OUTPUT);
    pinMode(8, OUTPUT);
}
void loop(){
    digitalWrite(5, LOW);
    digitalWrite(7, LOW);
    digitalWrite(8, HIGH);
    digitalWrite(6, HIGH);
    delay(2000);
    digitalWrite(8, LOW);
    digitalWrite(6, LOW);
    digitalWrite(5, HIGH);
    digitalWrite(7, HIGH);
    delay(2000);
}
```

Output:

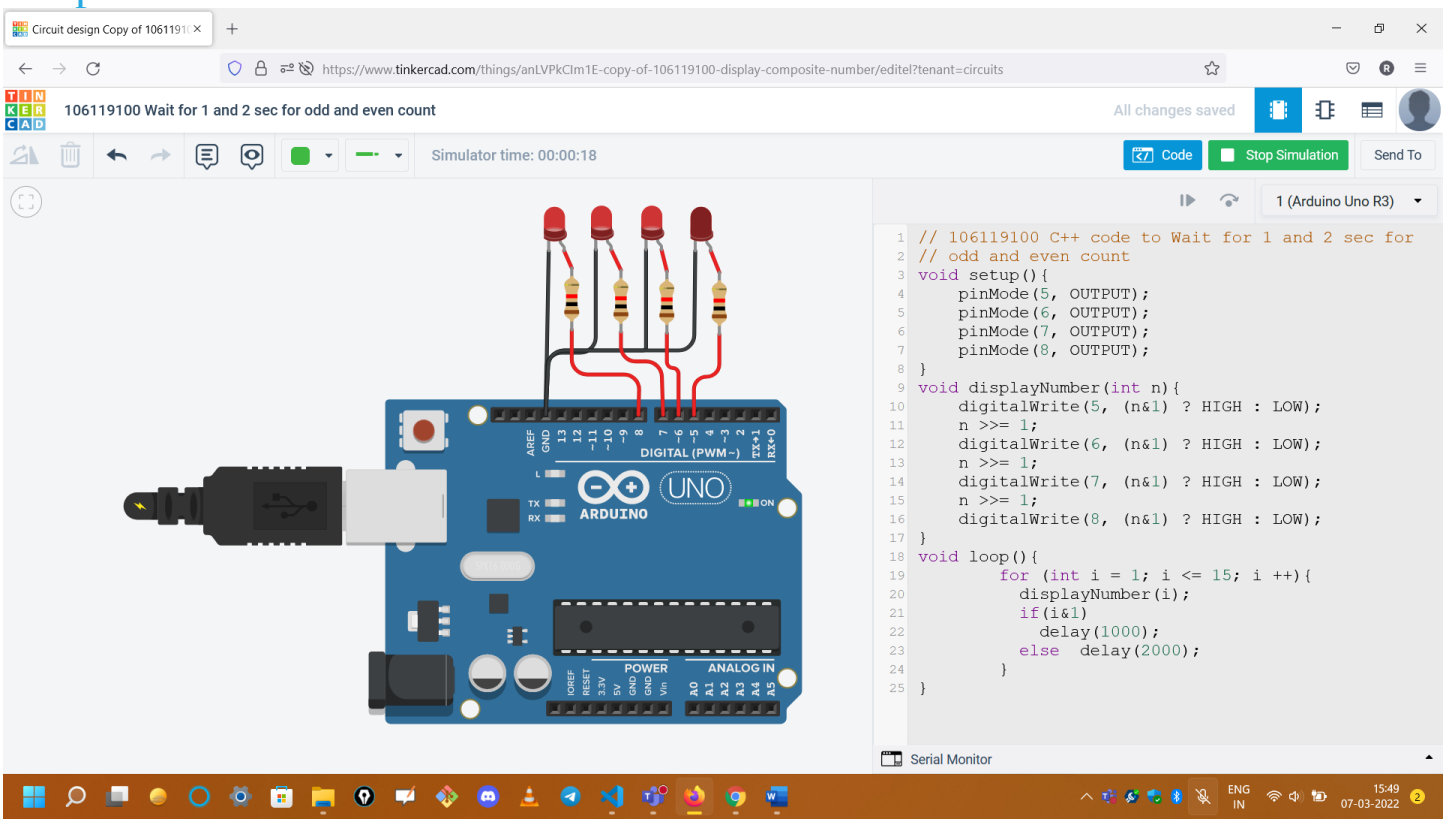

Circuit design Copy of 1061191
https://www.tinkercad.com/things/dMFjWHFTl6m-copy-of-106119100-wait-for-1-and-2-sec-for-odd-and-even-count-/editel?tenant=circuits
106119100 Blink Alternative LED
All changes saved
Simulator time: 00:00:07
Code
Stop Simulation
Send To
1 (Arduino Uno R3)
// 106119100 C++ code to Blink Alternative LED
void setup(){
pinMode(5, OUTPUT);
pinMode(6, OUTPUT);
pinMode(7, OUTPUT);
pinMode(8, OUTPUT);
}
void loop(){
digitalWrite(5, LOW);
digitalWrite(7, LOW);
digitalWrite(8, HIGH);
digitalWrite(6, HIGH);
delay(2000);
digitalWrite(8, LOW);
digitalWrite(6, LOW);
digitalWrite(5, HIGH);
digitalWrite(7, HIGH);
delay(2000);
}
Serial Monitor
DIGITAL (PWM~)
POWER
ANALOG IN
ARDUINO
UNO
ON
ENG
IN
16:01
07-03-2022

3. Blink LEDs – count from 1 to 15; if the board is counting odd value, wait for 1 sec, else wait for 2 sec.

Code:

```
// 106119100 C++ code to Wait for 1 and 2 sec for
// odd and even count
void setup()
{
    pinMode(5, OUTPUT);
    pinMode(6, OUTPUT);
    pinMode(7, OUTPUT);
    pinMode(8, OUTPUT);
}
void displayNumber(int n)
{
    digitalWrite(5, (n & 1) ? HIGH : LOW);
    n >>= 1;
    digitalWrite(6, (n & 1) ? HIGH : LOW);
    n >>= 1;
    digitalWrite(7, (n & 1) ? HIGH : LOW);
    n >>= 1;
    digitalWrite(8, (n & 1) ? HIGH : LOW);
}
void loop()
{
    for (int i = 1; i <= 15; i++)
    {
        displayNumber(i);
        if (i & 1)
            delay(1000);
        else
            delay(2000);
    }
}
```

Output:


Circuit design Copy of 1061191
https://www.tinkercad.com/things/anLVPkCIm1E-copy-of-106119100-display-composite-number/editel?tenant=circuits
106119100 Wait for 1 and 2 sec for odd and even count
All changes saved
Simulator time: 00:00:18
Code
Stop Simulation
Send To
1 (Arduino Uno R3)
// 106119100 C++ code to Wait for 1 and 2 sec for
// odd and even count
void setup(){
pinMode(5, OUTPUT);
pinMode(6, OUTPUT);
pinMode(7, OUTPUT);
pinMode(8, OUTPUT);
}
void displayNumber(int n){
digitalWrite(5, (n&1) ? HIGH : LOW);
n >>= 1;
digitalWrite(6, (n&1) ? HIGH : LOW);
n >>= 1;
digitalWrite(7, (n&1) ? HIGH : LOW);
n >>= 1;
digitalWrite(8, (n&1) ? HIGH : LOW);
}
void loop(){
for (int i = 1; i <= 15; i ++){
displayNumber(i);
if(i&1)
delay(1000);
else delay(2000);
}
}
Serial Monitor
DIGITAL (PWM~)
POWER
ANALOG IN
UNO
ARDUINO
ENG
IN
15:49
07-03-2022

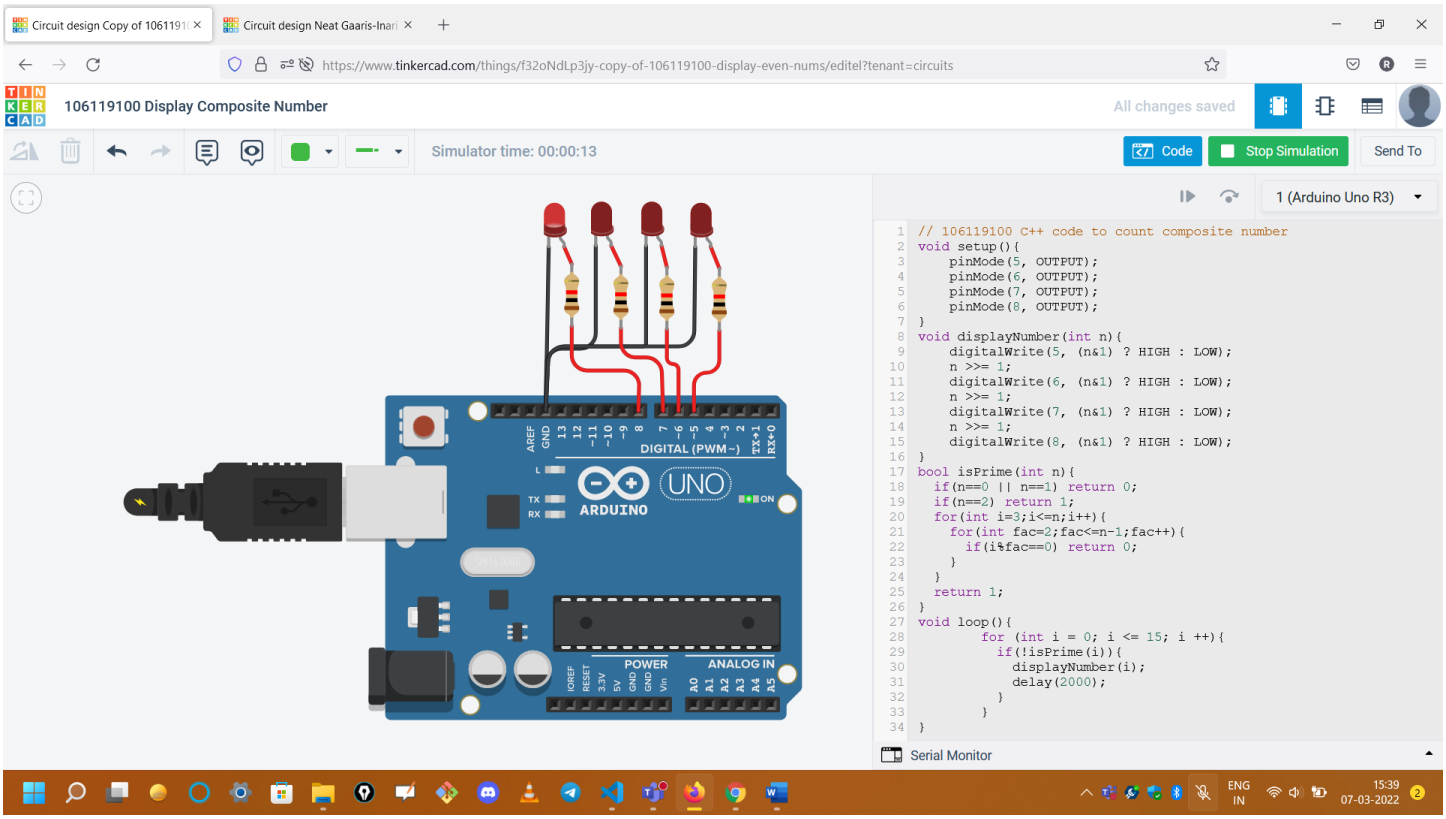
4. Blink LEDs – for all composite number below 15.

Code:

```
// 106119100 C++ code to count composite number
void setup()
{
    pinMode(5, OUTPUT);
    pinMode(6, OUTPUT);
    pinMode(7, OUTPUT);
    pinMode(8, OUTPUT);
}
void displayNumber(int n)
{
    digitalWrite(5, (n & 1) ? HIGH : LOW);
    n >>= 1;
    digitalWrite(6, (n & 1) ? HIGH : LOW);
    n >>= 1;
    digitalWrite(7, (n & 1) ? HIGH : LOW);
    n >>= 1;
    digitalWrite(8, (n & 1) ? HIGH : LOW);
}
bool isPrime(int n)
{
    if (n == 0 || n == 1)
        return 0;
    if (n == 2)
        return 1;
    for (int i = 3; i <= n; i++)
    {
        for (int fac = 2; fac <= n - 1; fac++)
        {
            if (i % fac == 0)
                return 0;
        }
```

```
    }
    return 1;
}
void loop()
{
    for (int i = 0; i <= 15; i++)
    {
        if (!isPrime(i))
        {
            displayNumber(i);
            delay(2000);
        }
    }
}
```

Output:



5. Blink LEDs – to count even numbers

Code:

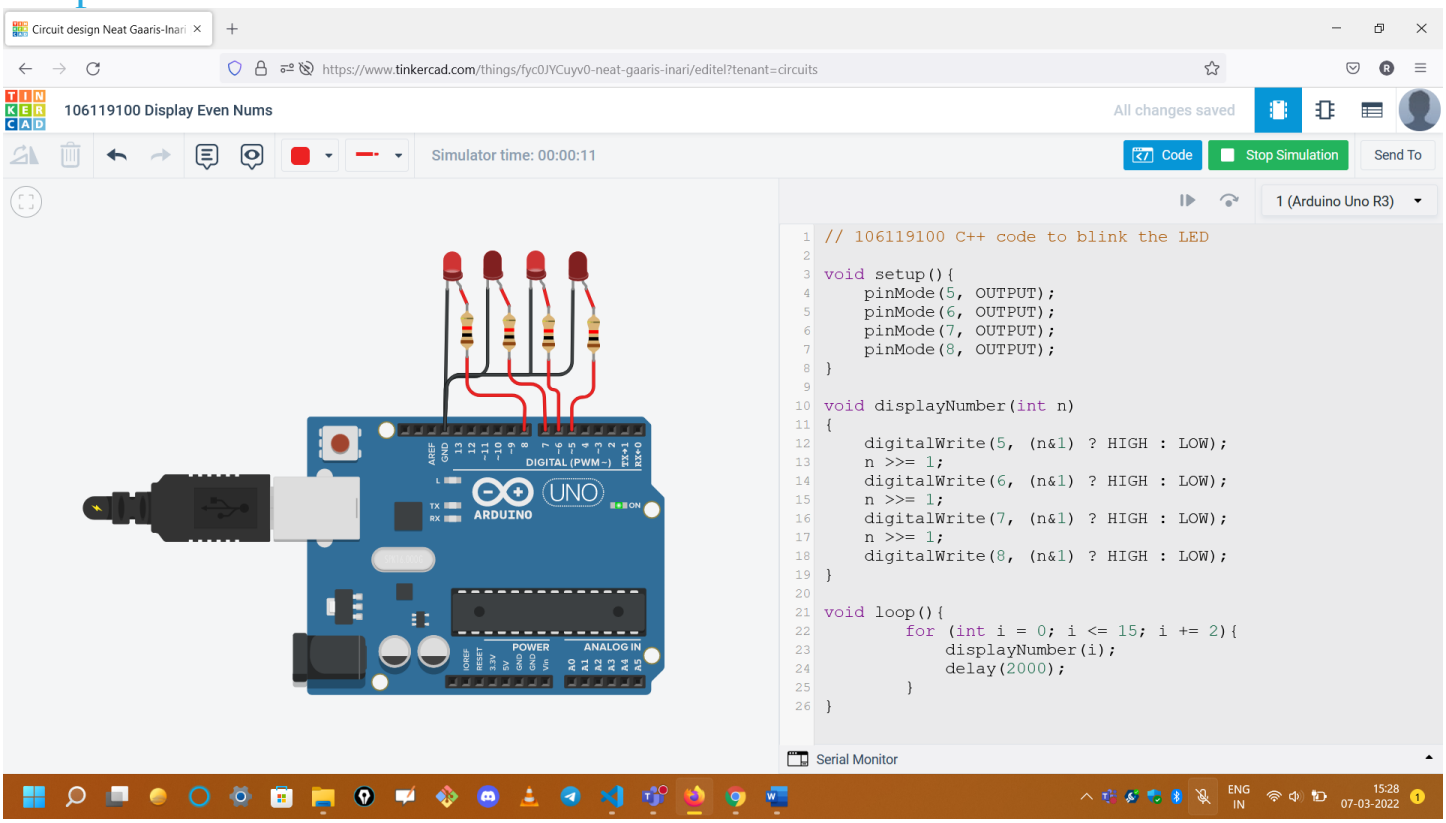
```
// 106119100 C++ code to blink the LED

void setup()
{
    pinMode(5, OUTPUT);
    pinMode(6, OUTPUT);
    pinMode(7, OUTPUT);
    pinMode(8, OUTPUT);
}

void displayNumber(int n)
{
    digitalWrite(5, (n & 1) ? HIGH : LOW);
    n >>= 1;
    digitalWrite(6, (n & 1) ? HIGH : LOW);
    n >>= 1;
    digitalWrite(7, (n & 1) ? HIGH : LOW);
    n >>= 1;
    digitalWrite(8, (n & 1) ? HIGH : LOW);
}

void loop()
{
    for (int i = 0; i <= 15; i += 2)
    {
        displayNumber(i);
        delay(2000);
    }
}
```

Output:


Circuit design Neat Gaaris-Inari
https://www.tinkercad.com/things/fyc0JYCuyv0-neat-gaaris-inari/editel?tenant=circuits
106119100 Display Even Nums
All changes saved
Simulator time: 00:00:11
Code
Stop Simulation
Send To
1 (Arduino Uno R3)
// 106119100 C++ code to blink the LED
void setup(){
pinMode(5, OUTPUT);
pinMode(6, OUTPUT);
pinMode(7, OUTPUT);
pinMode(8, OUTPUT);
}
void displayNumber(int n)
{
digitalWrite(5, (n&1) ? HIGH : LOW);
n >>= 1;
digitalWrite(6, (n&1) ? HIGH : LOW);
n >>= 1;
digitalWrite(7, (n&1) ? HIGH : LOW);
n >>= 1;
digitalWrite(8, (n&1) ? HIGH : LOW);
}
void loop(){
for (int i = 0; i <= 15; i += 2){
displayNumber(i);
delay(2000);
}
}
Serial Monitor
ARDUINO
UNO
DIGITAL (PWM~)
POWER
ANALOG IN
ENG
IN
15:28
07-03-2022