Islamic University of Gaza

Computer Engineering

بسم الله الرحمن الرحيم

Embedded Systems

Homework #2

Student Name **Akram Hatem Abo Jbara**

Student No.: **120200602**

Instructor Name: **Eng. Amal Abu Jasser**

Day: **Saturday**

Date: **29/Nov/2024**

Use a Common- Anode 7-Segment Display for 4 digits to count from 555 to 0, when reaching to 0 a red led connected to port 1 must shine.

Code(Text and Screenshot):

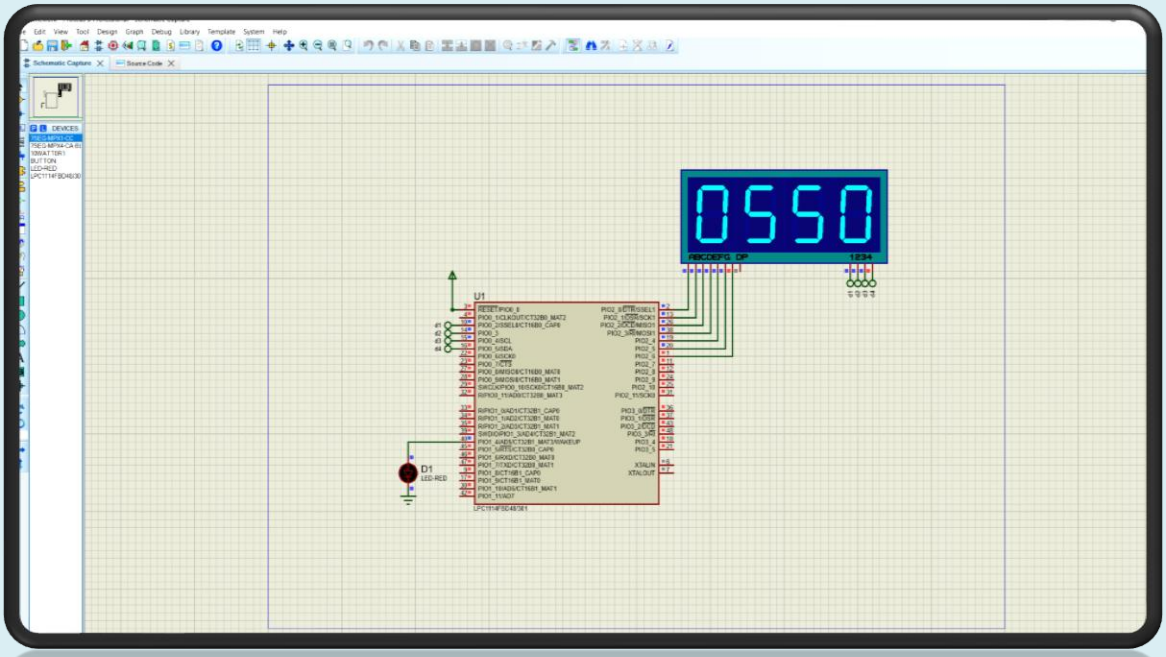
```
#include <LPC11xx.h>
#define GPIO0DIR (*((volatile unsigned long *)0x50008000))
#define GPIO0DATA (*((volatile unsigned long *)0x50003ffc))
#define GPIO1DIR (*((volatile unsigned long *)0x50018000))
#define GPIO1DATA (*((volatile unsigned long *)0x50013ffc))
#define GPIO2DIR (*((volatile unsigned long *)0x50028000))
#define GPIO2DATA (*((volatile unsigned long *)0x50023ffc))




int main (void){
   int seven_seg_encoder [] = {
    0x40,
    0x79,
    0x24,
    0x30,
    0x19,
    0x12,
    0x02,
    0x78,
    0x00,
    0x10
   };
```

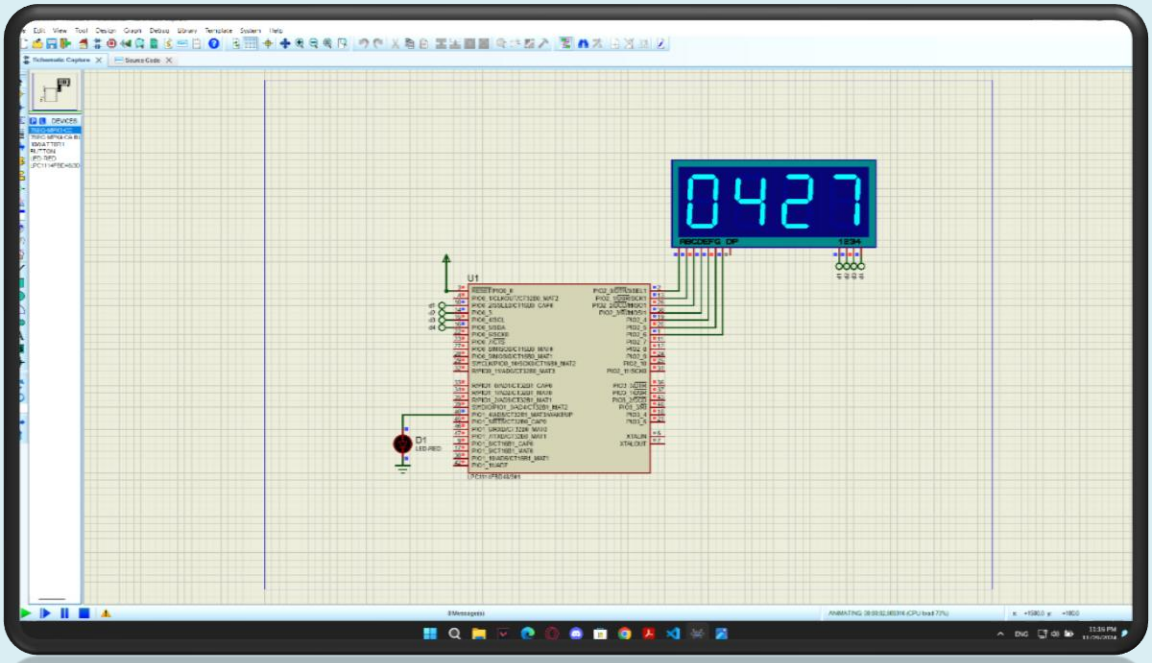
```
   int num=555;
   int i =0;

   GPIO2DIR |= 0b1111111;
   GPIO0DIR |= 0b111100;
   GPIO1DIR |= 0b10000;
   GPIO1DATA = 0b00000;

   while (1) {

      GPIO0DATA=0b000100;
      GPIO2DATA = 0x40;

      for (i =0; i<20000; i++);
      GPIO0DATA=0b001000;
      GPIO2DATA = seven_seg_encoder[(num/100) %10];
      for (i =0; i<20000; i++);
      GPIO0DATA=0b010000;
      GPIO2DATA = seven_seg_encoder[(num/10) %10];
      for (i =0; i<20000; i++);
      GPIO0DATA=0b100000;
      GPIO2DATA = seven_seg_encoder[(num) %10];
      for (i =0; i<20000; i++);

      num--;

      if(num==0){
     GPIO1DATA = 0b10000;
     GPIO2DATA = 0b1000000;
     break;
      }

   }
   return 0;
}
```

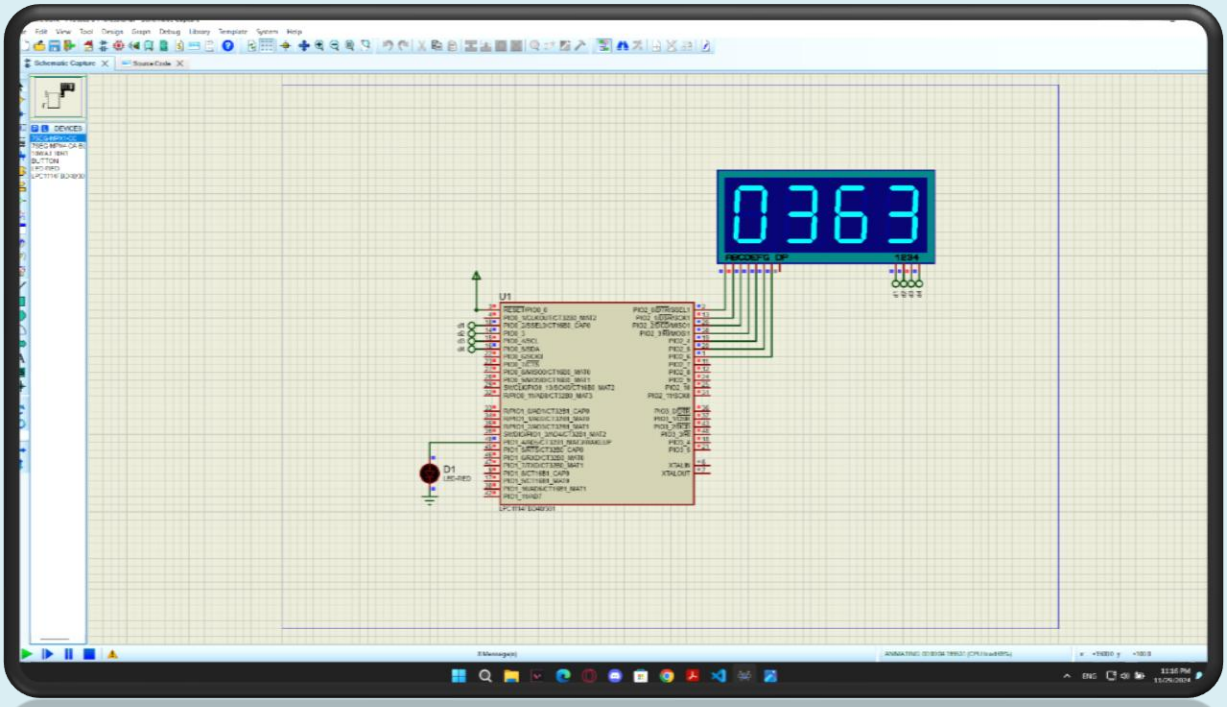
main.c

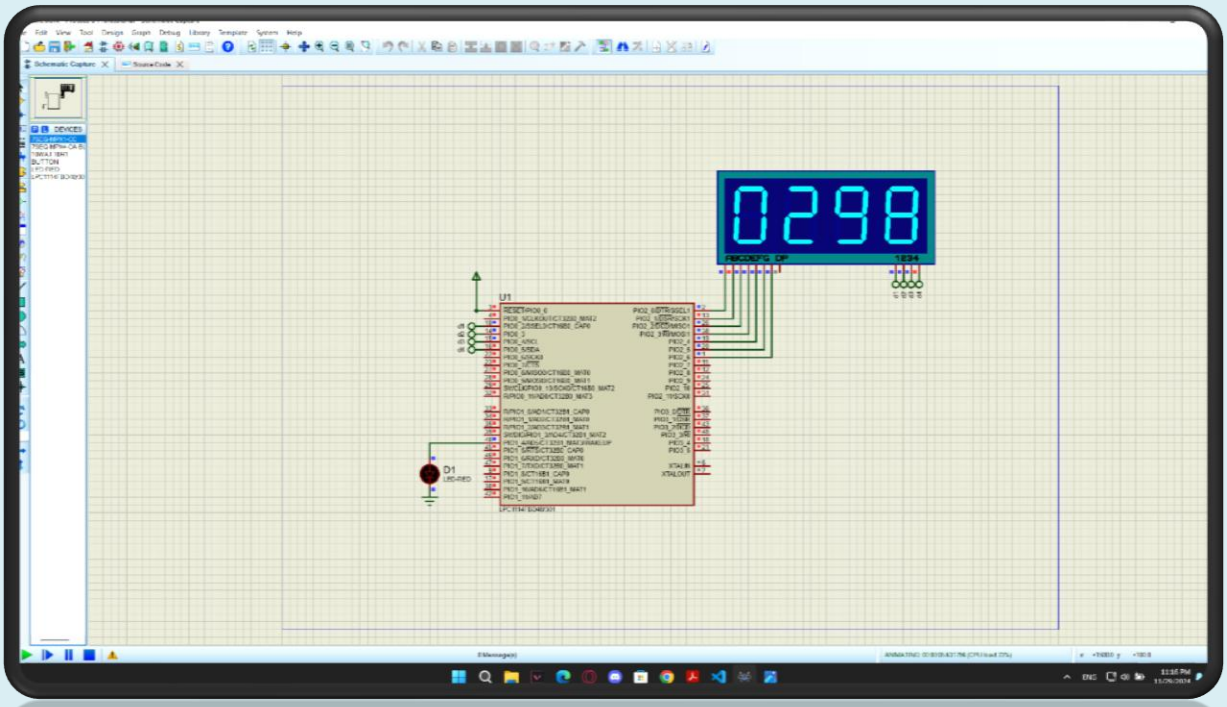
```c
#include <LPC11xx.h>
#define GPIO0DIR (*((volatile unsigned long *)0x50008000))
#define GPIO0DATA (*((volatile unsigned long *)0x50003ffc))
#define GPIO1DIR (*((volatile unsigned long *)0x50018000))
#define GPIO1DATA (*((volatile unsigned long *)0x50013ffc))
#define GPIO2DIR (*((volatile unsigned long *)0x50028000))
#define GPIO2DATA (*((volatile unsigned long *)0x50023ffc))


int main (void){
   int seven_seg_encoder [] = {
    0x40,
    0x79,
    0x24,
    0x30,
    0x19,
    0x12,
    0x02,
    0x78,
    0x00,
    0x10
   };
   int num=555;
   int i =0;
   GPIO2DIR |= 0b1111111;
   GPIO0DIR |= 0b111100;
   GPIO1DIR |= 0b10000;
   GPIO1DATA = 0b00000;
   while (1) {
      GPIO0DATA=0b000100;
      GPIO2DATA = 0x40;
      for (i =0; i<20000; i++);
      GPIO0DATA=0b001000;
      GPIO2DATA = seven_seg_encoder[(num/100) %10];
      for (i =0; i<20000; i++);
      GPIO0DATA=0b010000;
      GPIO2DATA = seven_seg_encoder[(num/10) %10];
      for (i =0; i<20000; i++);
      GPIO0DATA=0b100000;
      GPIO2DATA = seven_seg_encoder[(num) %10];
      for (i =0; i<20000; i++);
      num--;
      if(num==0){
         GPIO1DATA = 0b10000;
         GPIO2DATA = 0b1000000;
         break;
      }
   }
   return 0;
}
```

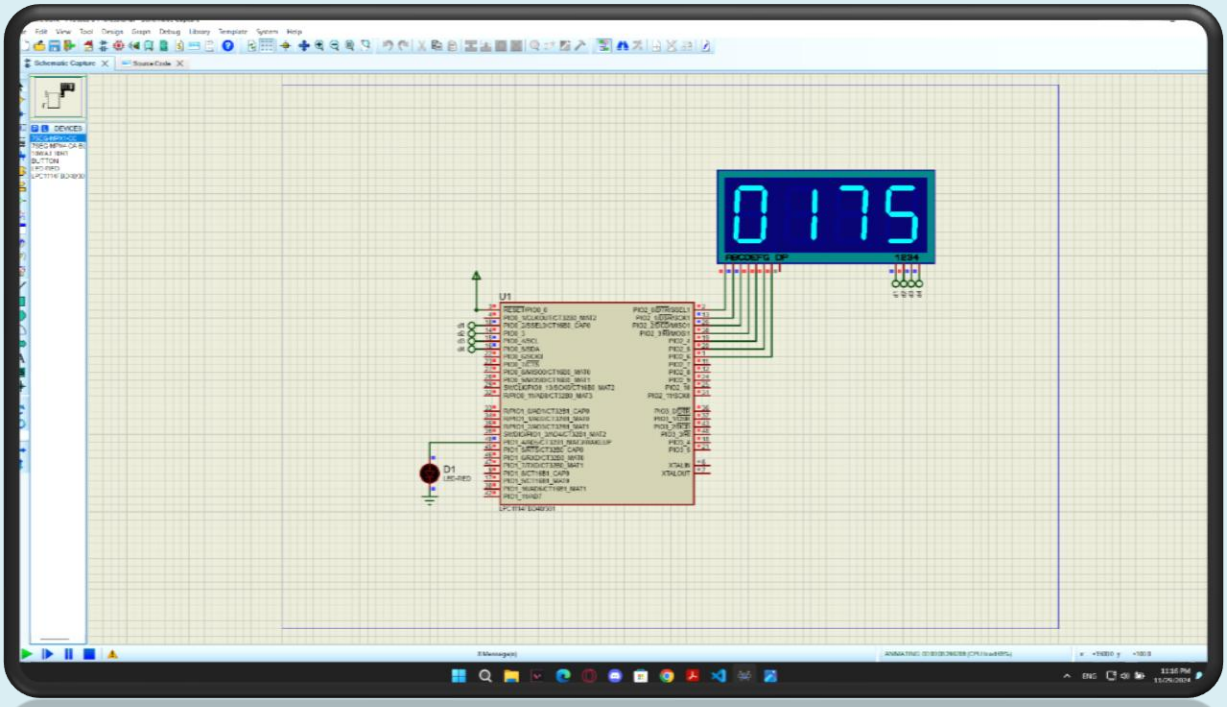
Result

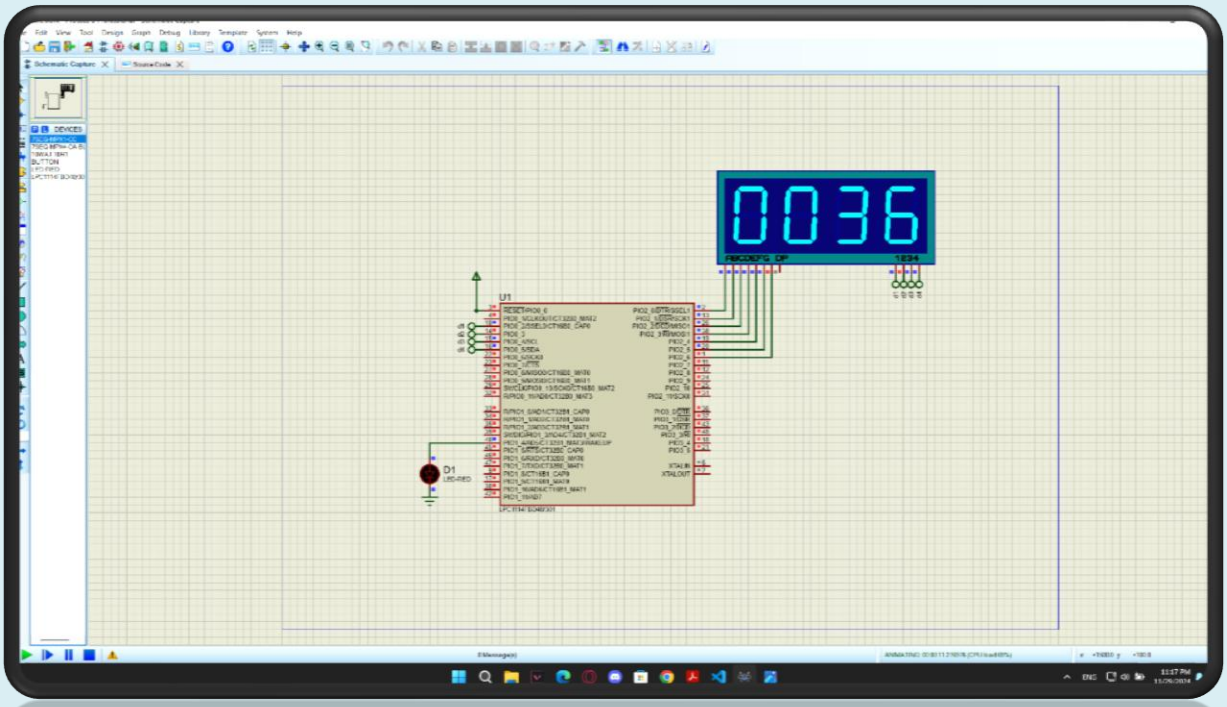

0550
ABCDEFG DP
1234
U1
D1
LED-RED

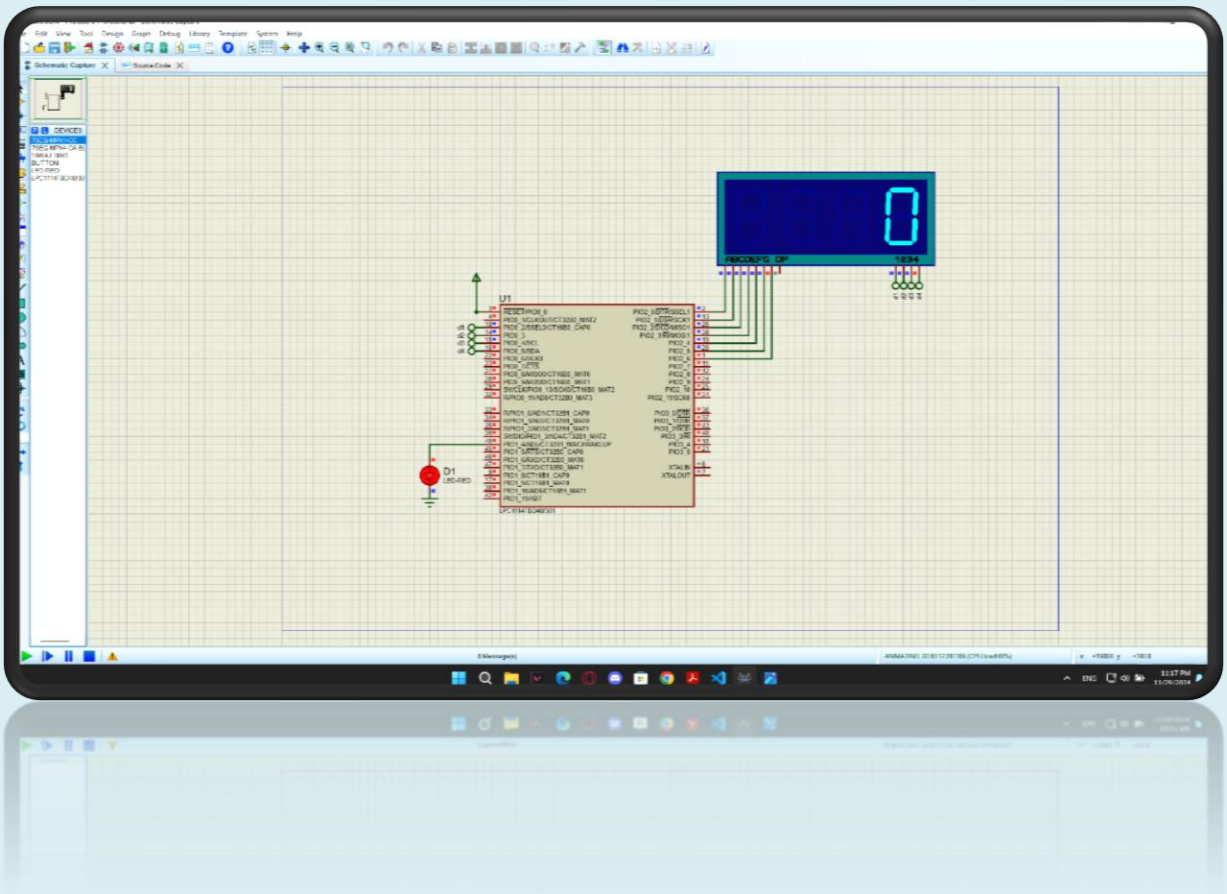

0427
ABCDEFG DP
1234
U1
D1
LED-RED


0363


0298


0175


0036



Thank You

Akram Hatem Abo Jbara