

**Islamic University of Gaza**

**Computer Engineering**



بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

# Embedded Systems

## Homework #2

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**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;
    }

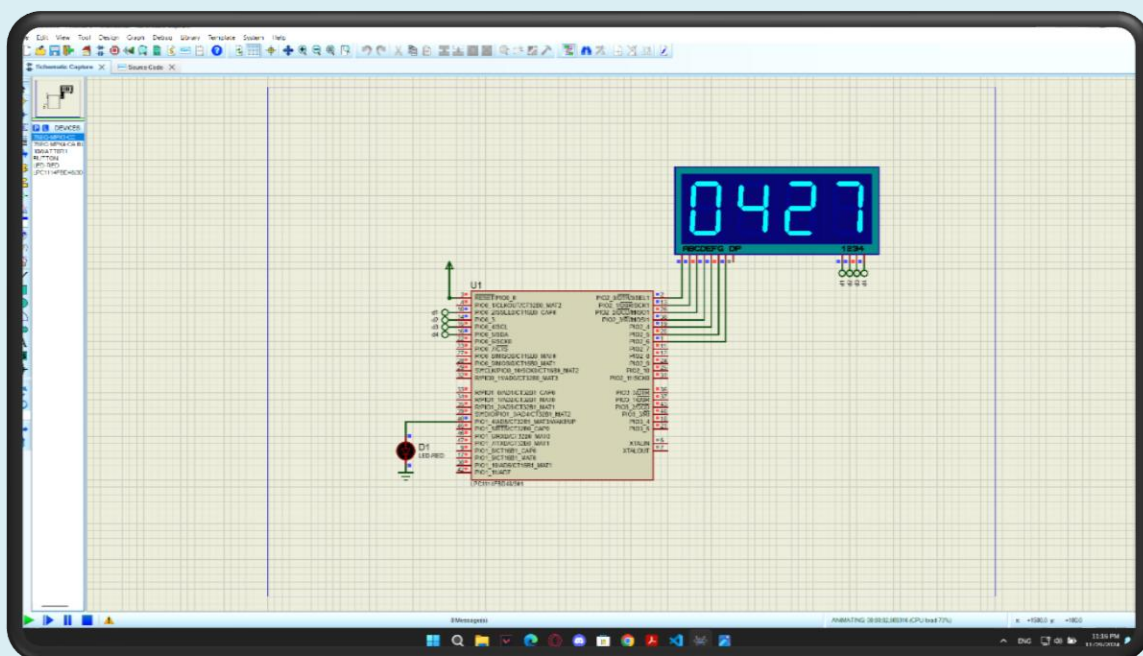
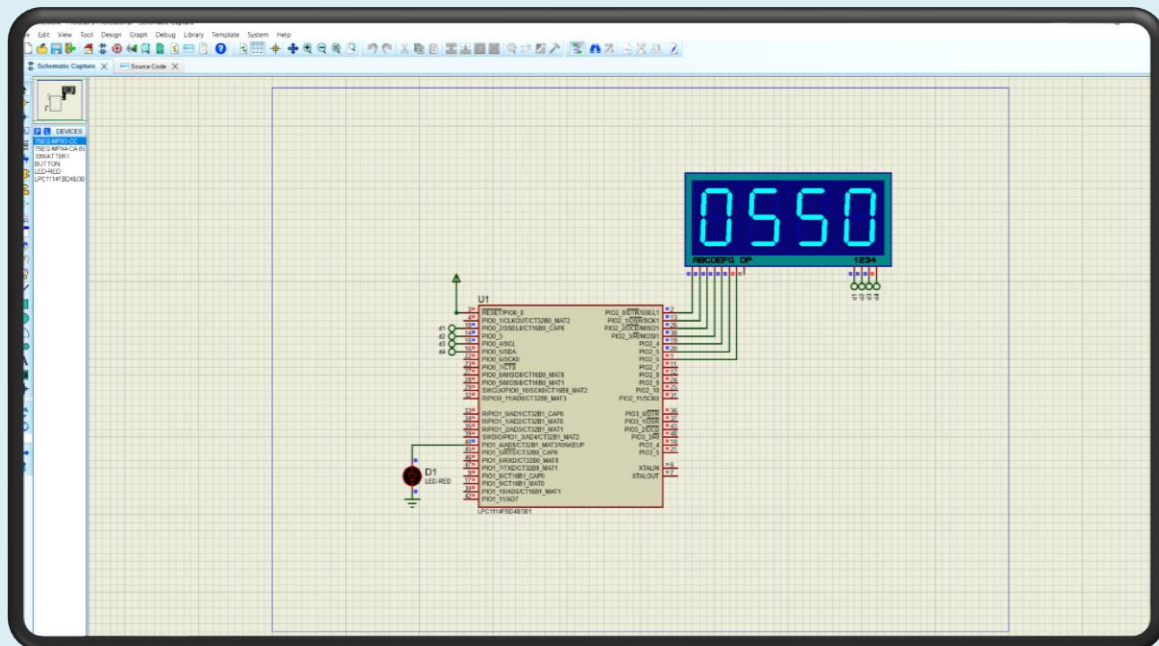
}
return 0;
}
```

```

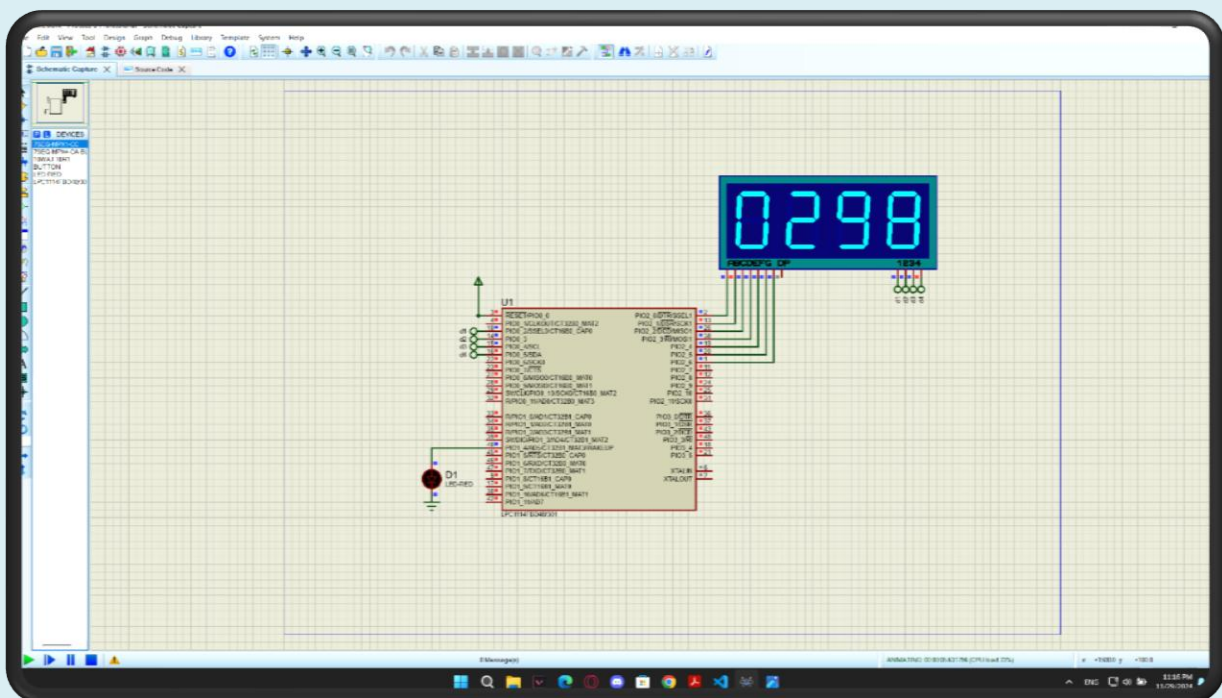
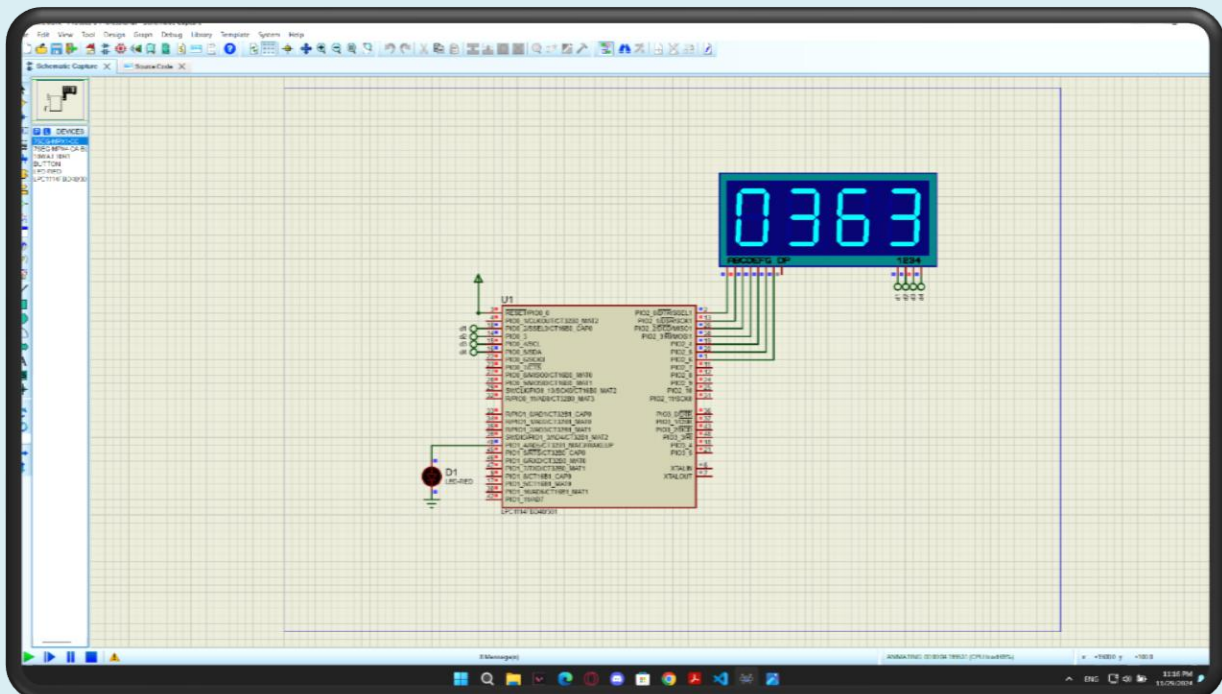
main.c
1  #include <LPC11xx.h>
2  #define GPIO0DIR *((volatile unsigned long *)0x50008000)
3  #define GPIO0DATA *((volatile unsigned long *)0x50003ffc)
4  #define GPIO1DIR *((volatile unsigned long *)0x50018000)
5  #define GPIO1DATA *((volatile unsigned long *)0x50013ffc)
6  #define GPIO2DIR *((volatile unsigned long *)0x50028000)
7  #define GPIO2DATA *((volatile unsigned long *)0x50023ffc)
8
9
10 int main (void){
11     int seven_seg_encoder [] = {
12         0x40,
13         0x79,
14         0x24,
15         0x30,
16         0x19,
17         0x12,
18         0x02,
19         0x78,
20         0x00,
21         0x10
22     };
23     int num=555;
24     int i =0;
25     GPIO2DIR |= 0b1111111;
26     GPIO0DIR |= 0b1111100;
27     GPIO1DIR |= 0b10000;
28     GPIO1DATA = 0b00000;
29     while (1) {
30         GPIO0DATA=0b000100;
31         GPIO2DATA = 0x40;
32         for (i =0; i<20000; i++);
33         GPIO0DATA=0b001000;
34         GPIO2DATA = seven_seg_encoder[(num/100) %10];
35         for (i =0; i<20000; i++);
36         GPIO0DATA=0b010000;
37         GPIO2DATA = seven_seg_encoder[(num/10) %10];
38         for (i =0; i<20000; i++);
39         GPIO0DATA=0b100000;
40         GPIO2DATA = seven_seg_encoder[(num) %10];
41         for (i =0; i<20000; i++);
42         num--;
43         if(num==0){
44             GPIO1DATA = 0b10000;
45             GPIO2DATA = 0b1000000;
46             break;
47         }
48     }
49     return 0;
50 }

```

# Result

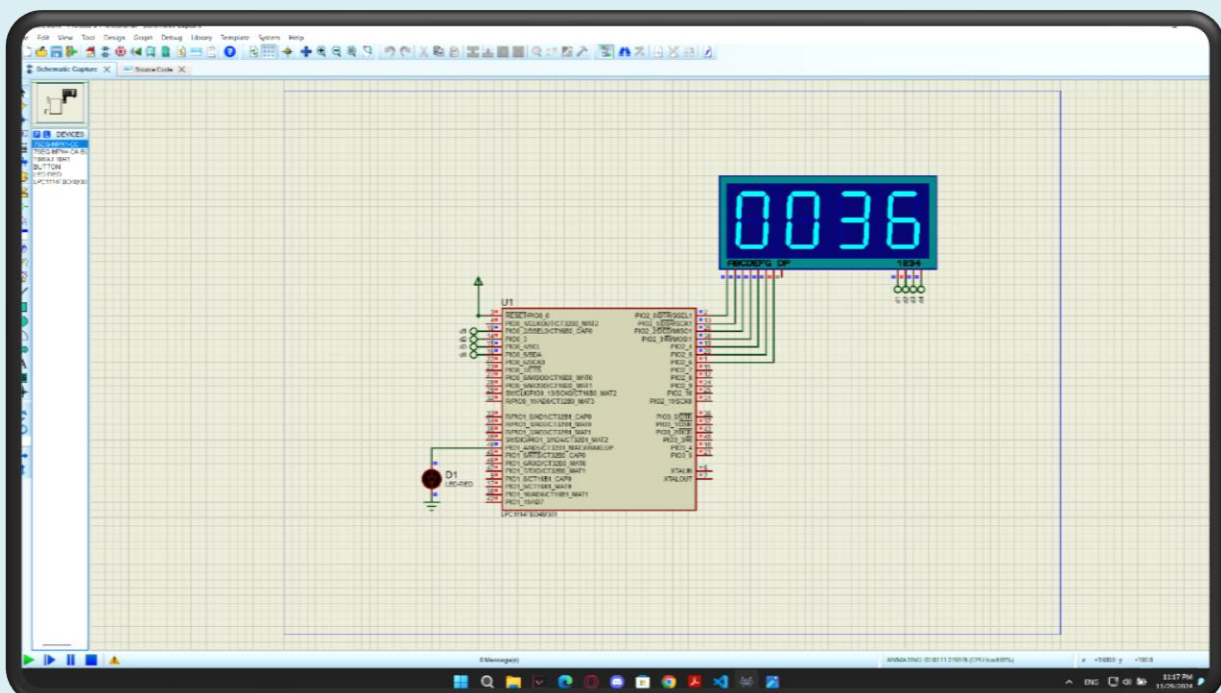
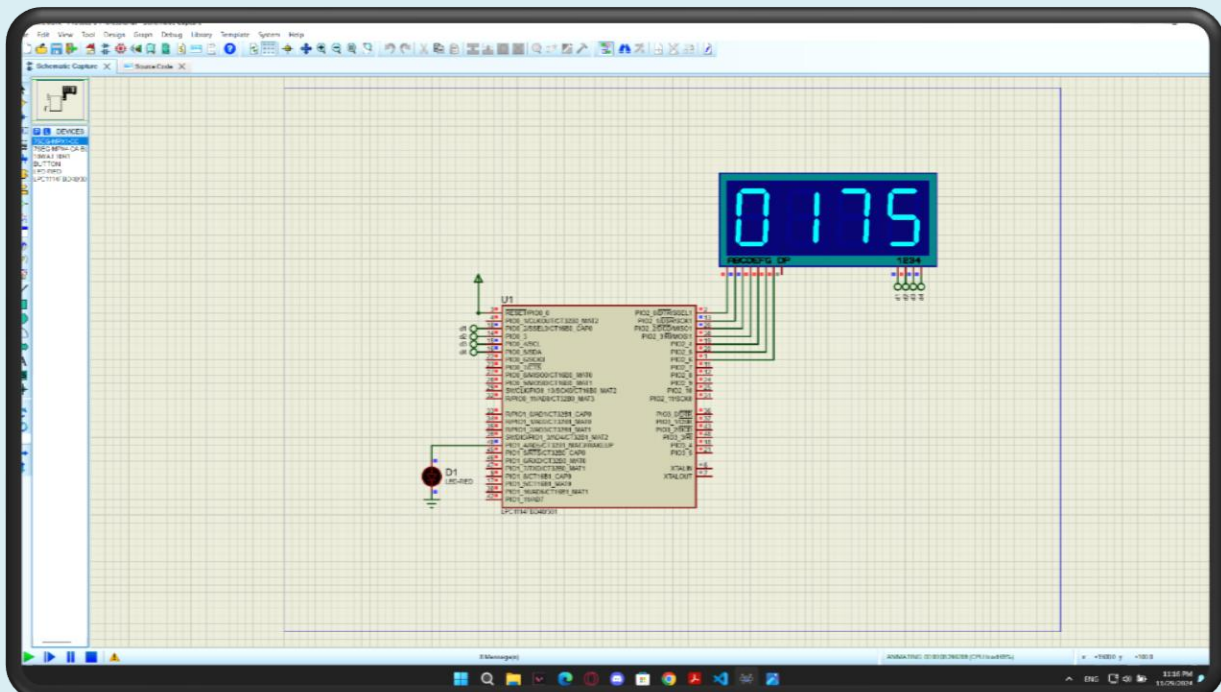


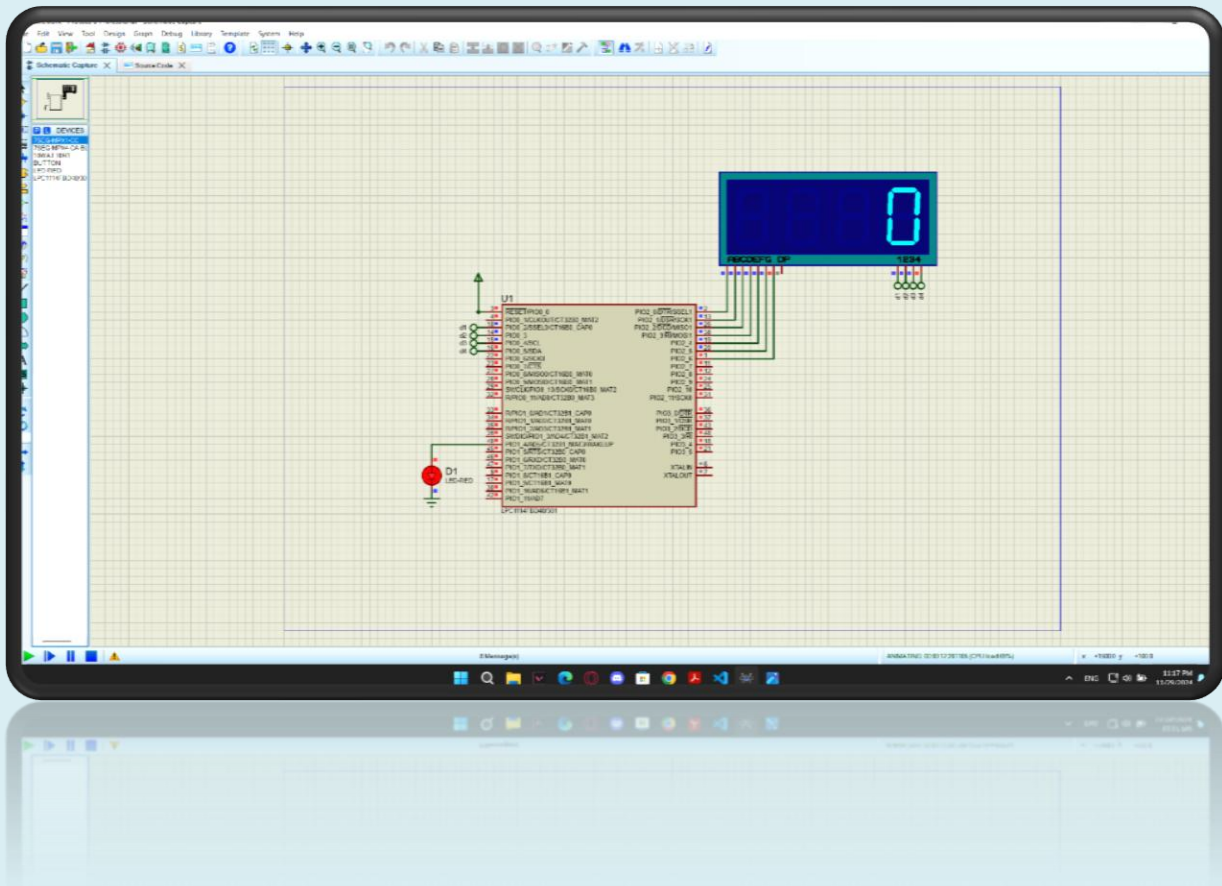
# Embedded Systems





# Embedded Systems





# Thank You