THE ISLAMIC UNIVERSITY – FACULTY OF ENGINEERING

Computer ENGINEERING DEPARTMENT

Embeded Systems

HOMEWORK 2

Prepared by:	Student number:
Amal Yasser Anan	220201122

Submitted for:

Eng. Amal Abu Jasser

Gaza, Palestine

November 22,2024

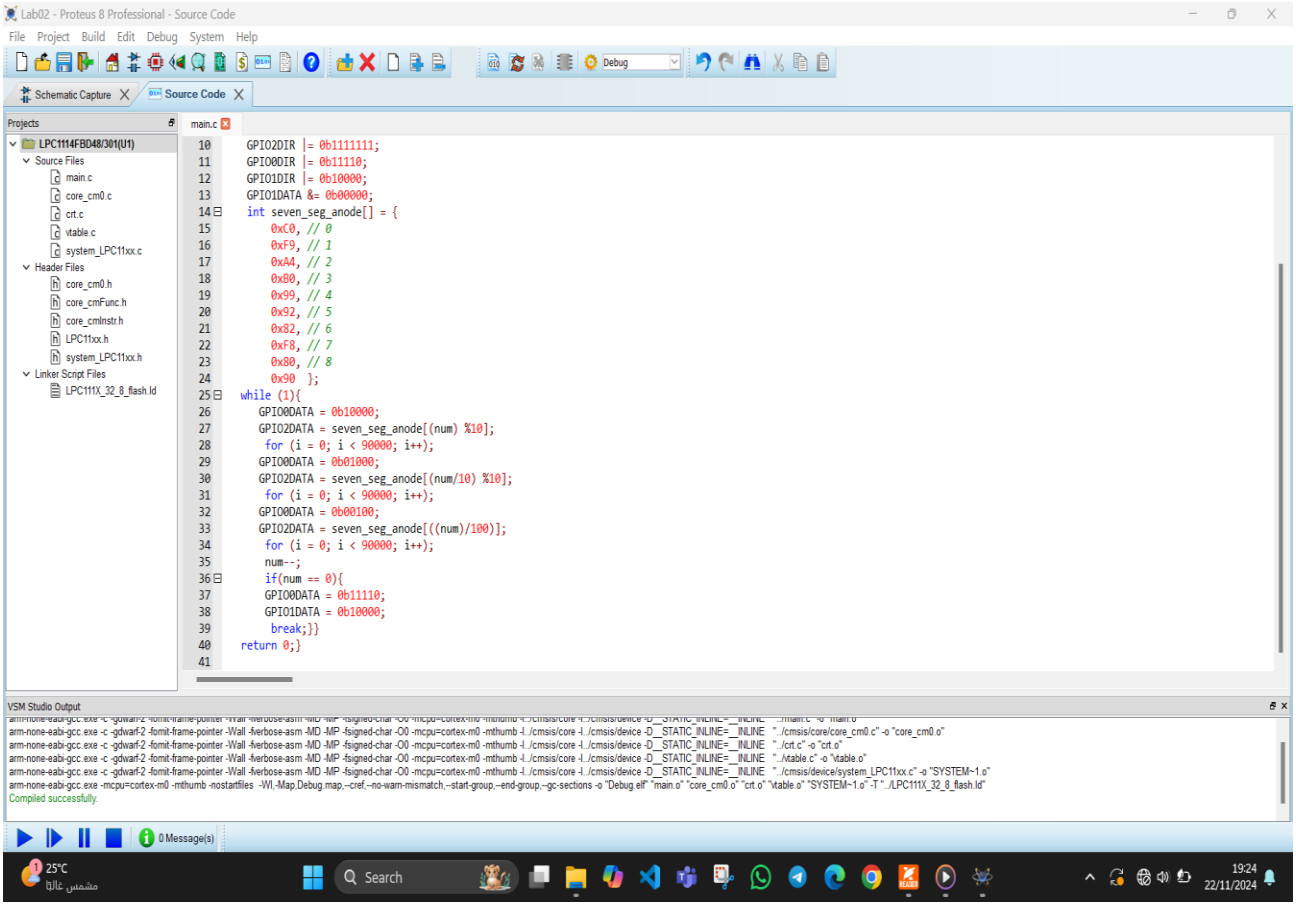
Code:

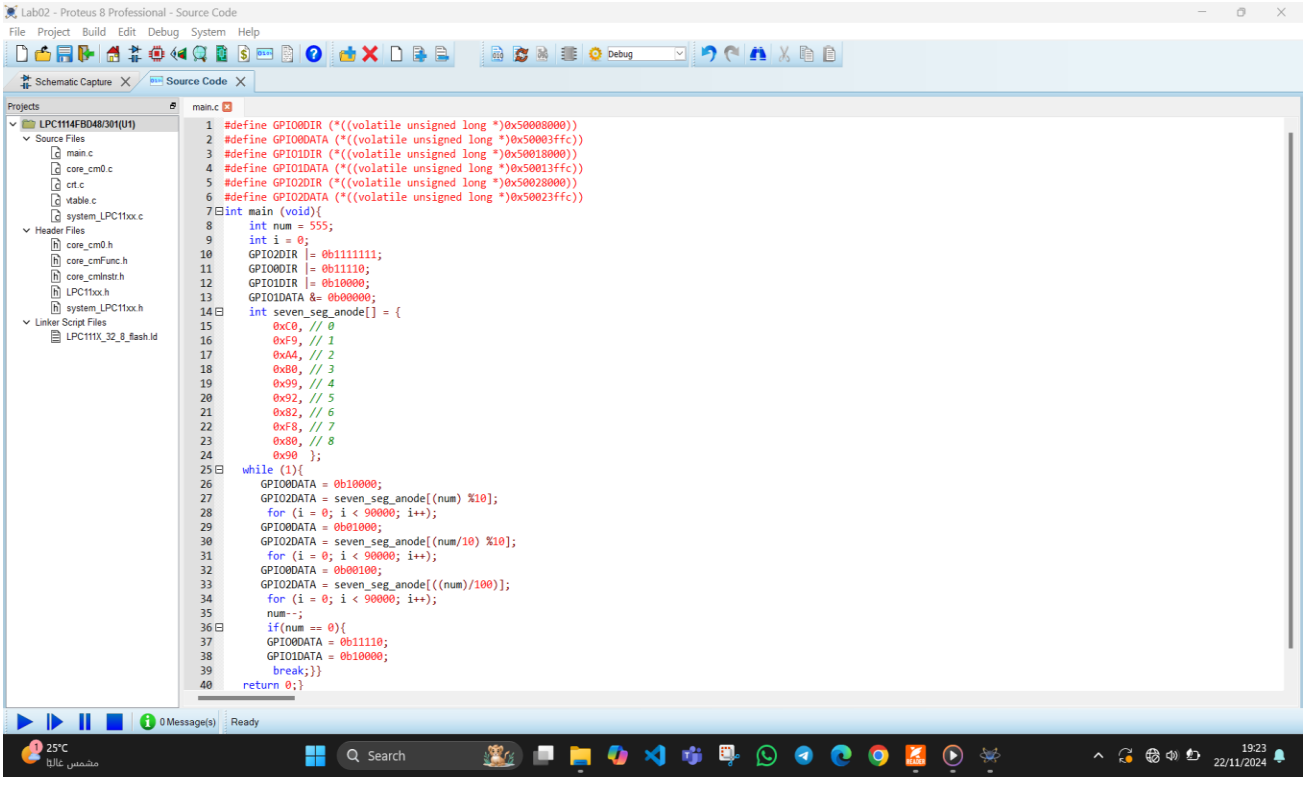
Source Code

main.c

```
#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 num = 555;
    int i = 0;
    GPIO2DIR |= 0b1111111;
    GPIO0DIR |= 0b11110;
    GPIO1DIR |= 0b10000;
    GPIO1DATA &= 0b00000;
    int seven_seg_anode[] = {
        0xC0, // 0
        0xF9, // 1
        0xA4, // 2
        0xB0, // 3
        0x99, // 4
        0x92, // 5
        0x82, // 6
        0xF8, // 7
        0x80, // 8
        0x90  };
   while (1){
      GPIO0DATA = 0b10000;
      GPIO2DATA = seven_seg_anode[(num) %10];
       for (i = 0; i < 10000; i++);
      GPIO0DATA = 0b01000;
      GPIO2DATA = seven_seg_anode[(num/10) %10];
       for (i = 0; i < 10000; i++);
      GPIO0DATA = 0b00100;
      GPIO2DATA = seven_seg_anode[((num)/100)];
       for (i = 0; i < 10000; i++);
       num--;
       if(num == 0){
       GPIO0DATA = 0b11110;
       GPIO1DATA = 0b10000;
        break;}}
   return 0;}

```


Lab02 - Proteus 8 Professional - Source Code
File Project Build Edit Debug System Help
Schematic Capture
Source Code
Projects
LPC1114FBD48/301(U1)
Source Files
main.c
core_cm0.c
crt.c
vtable.c
system_LPC11xx.c
Header Files
core_cm0.h
core_cmFunc.h
core_cmInstr.h
LPC11xx.h
system_LPC11xx.h
Linker Script Files
LPC111X_32_8_flash.ld
main.c
10 GPIO2DIR |= 0b1111111;
11 GPIO0DIR |= 0b11110;
12 GPIO1DIR |= 0b10000;
13 GPIO1DATA &= 0b00000;
14 int seven_seg_anode[] = {
15 0xC0, // 0
16 0xF9, // 1
17 0xA4, // 2
18 0xB0, // 3
19 0x99, // 4
20 0x92, // 5
21 0x82, // 6
22 0xF8, // 7
23 0x80, // 8
24 0x90 };
25 while (1){
26 GPIO0DATA = 0b10000;
27 GPIO2DATA = seven_seg_anode[(num) %10];
28 for (i = 0; i < 90000; i++);
29 GPIO0DATA = 0b01000;
30 GPIO2DATA = seven_seg_anode[(num/10) %10];
31 for (i = 0; i < 90000; i++);
32 GPIO0DATA = 0b00100;
33 GPIO2DATA = seven_seg_anode[((num)/100)];
34 for (i = 0; i < 90000; i++);
35 num--;
36 if(num == 0){
37 GPIO0DATA = 0b11110;
38 GPIO1DATA = 0b10000;
39 break;}}
40 return 0;}
41
VSM Studio Output
arm-none-eabi-gcc.exe -c -gdwarf-2 -fomit-frame-pointer -Wall -fverbose-asm -MD -MP -fsigned-char -O0 -mcpu=cortex-m0 -mthumb -I../cmsis/core -I../cmsis/device -D__STATIC_INLINE=__INLINE "../cmsis/core/core_cm0.c" -o "core_cm0.o"
arm-none-eabi-gcc.exe -c -gdwarf-2 -fomit-frame-pointer -Wall -fverbose-asm -MD -MP -fsigned-char -O0 -mcpu=cortex-m0 -mthumb -I../cmsis/core -I../cmsis/device -D__STATIC_INLINE=__INLINE "../crt.c" -o "crt.o"
arm-none-eabi-gcc.exe -c -gdwarf-2 -fomit-frame-pointer -Wall -fverbose-asm -MD -MP -fsigned-char -O0 -mcpu=cortex-m0 -mthumb -I../cmsis/core -I../cmsis/device -D__STATIC_INLINE=__INLINE "../vtable.c" -o "vtable.o"
arm-none-eabi-gcc.exe -c -gdwarf-2 -fomit-frame-pointer -Wall -fverbose-asm -MD -MP -fsigned-char -O0 -mcpu=cortex-m0 -mthumb -I../cmsis/core -I../cmsis/device -D__STATIC_INLINE=__INLINE "../cmsis/device/system_LPC11xx.c" -o "SYSTEM~1.o"
arm-none-eabi-gcc.exe -mcpu=cortex-m0 -mthumb -nostartfiles -Wl,-Map,Debug.map,--cref,--no-warn-mismatch,--start-group,--end-group,--gc-sections -o "Debug.elf" "main.o" "core_cm0.o" "crt.o" "vtable.o" "SYSTEM~1.o" -T "../LPC111X_32_8_flash.ld"
Compiled successfully.
0 Message(s)
25°C
مشمس غالبًا
Search
19:24
22/11/2024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main.c
1 #define GPIO0DIR (*((volatile unsigned long *)0x50008000))
2 #define GPIO0DATA (*((volatile unsigned long *)0x50003ffc))
3 #define GPIO1DIR (*((volatile unsigned long *)0x50018000))
4 #define GPIO1DATA (*((volatile unsigned long *)0x50013ffc))
5 #define GPIO2DIR (*((volatile unsigned long *)0x50028000))
6 #define GPIO2DATA (*((volatile unsigned long *)0x50023ffc))
7 int main (void){
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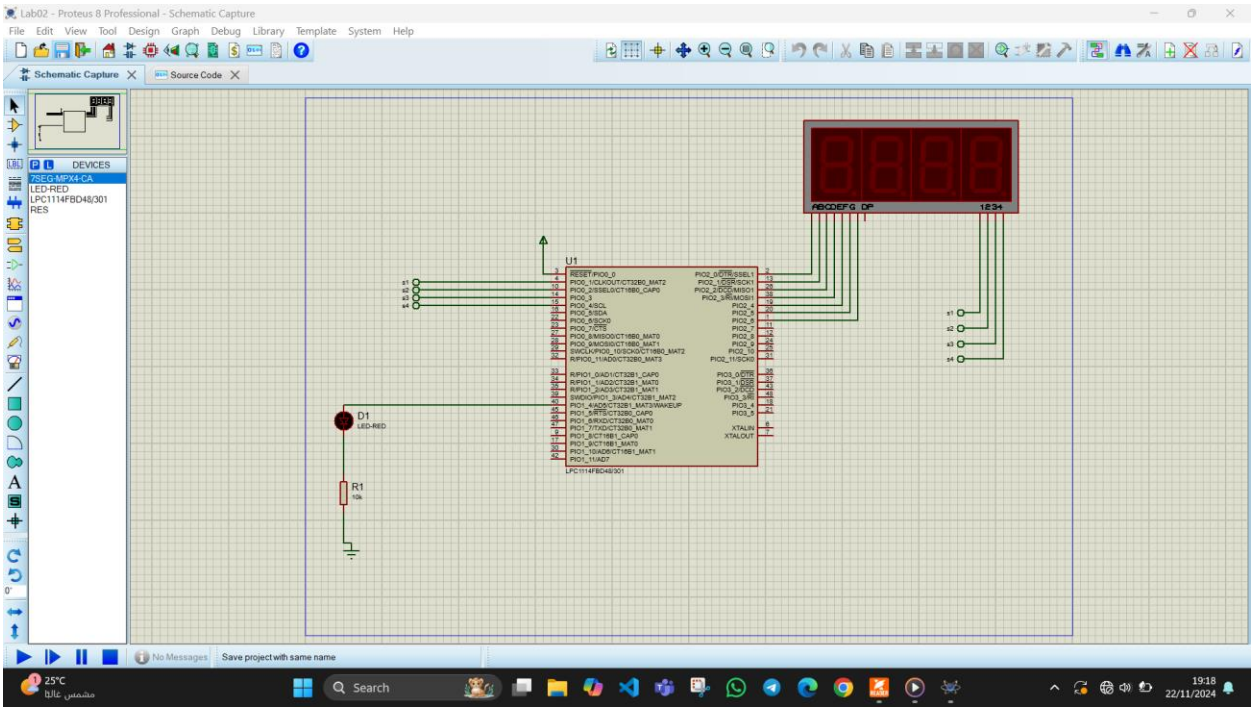
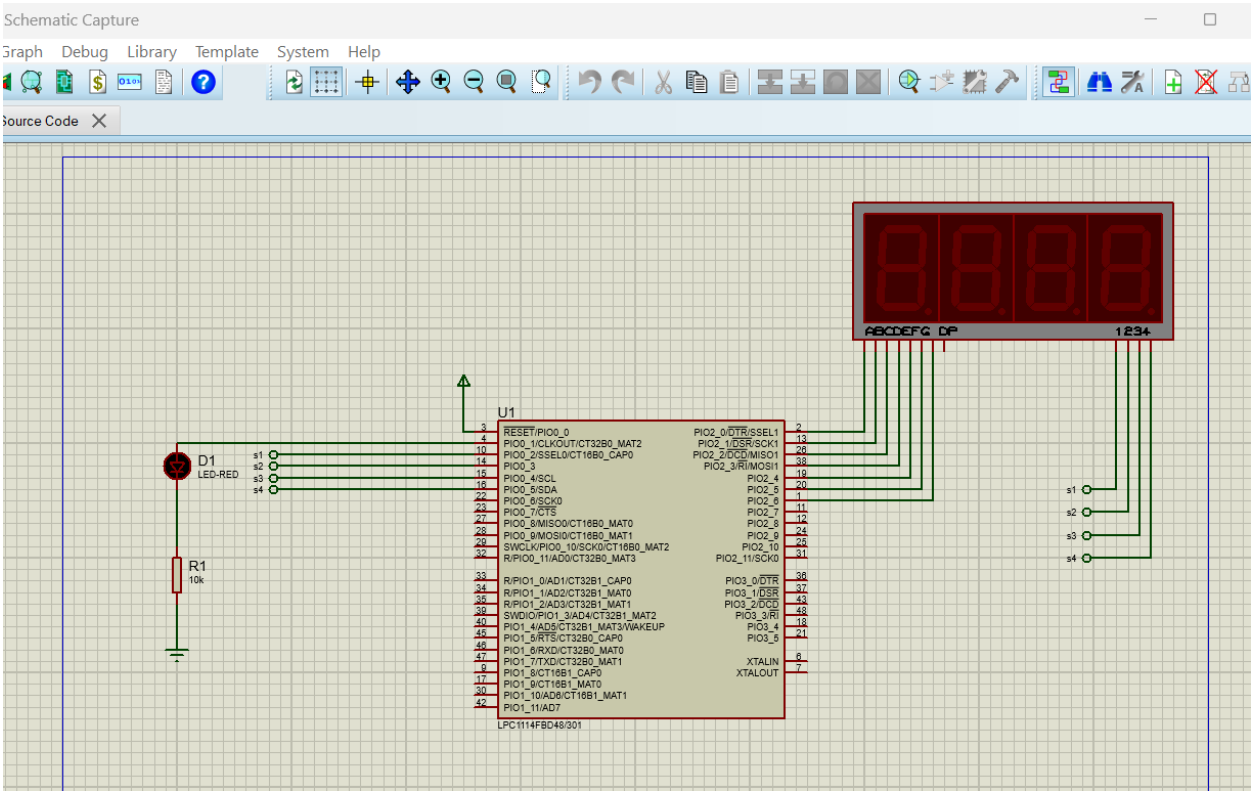
25 while (1){
26 GPIO0DATA = 0b10000;
27 GPIO2DATA = seven_seg_anode[(num) %10];
28 for (i = 0; i < 90000; i++);
29 GPIO0DATA = 0b01000;
30 GPIO2DATA = seven_seg_anode[(num/10) %10];
31 for (i = 0; i < 90000; i++);
32 GPIO0DATA = 0b00100;
33 GPIO2DATA = seven_seg_anode[((num)/100)];
34 for (i = 0; i < 90000; i++);
35 num--;
36 if(num == 0){
37 GPIO0DATA = 0b11110;
38 GPIO1DATA = 0b10000;
39 break;}}
40 return 0;}
0 Message(s)
Ready
25°C
مشمس غالبًا
Search
19:23
22/11/2024

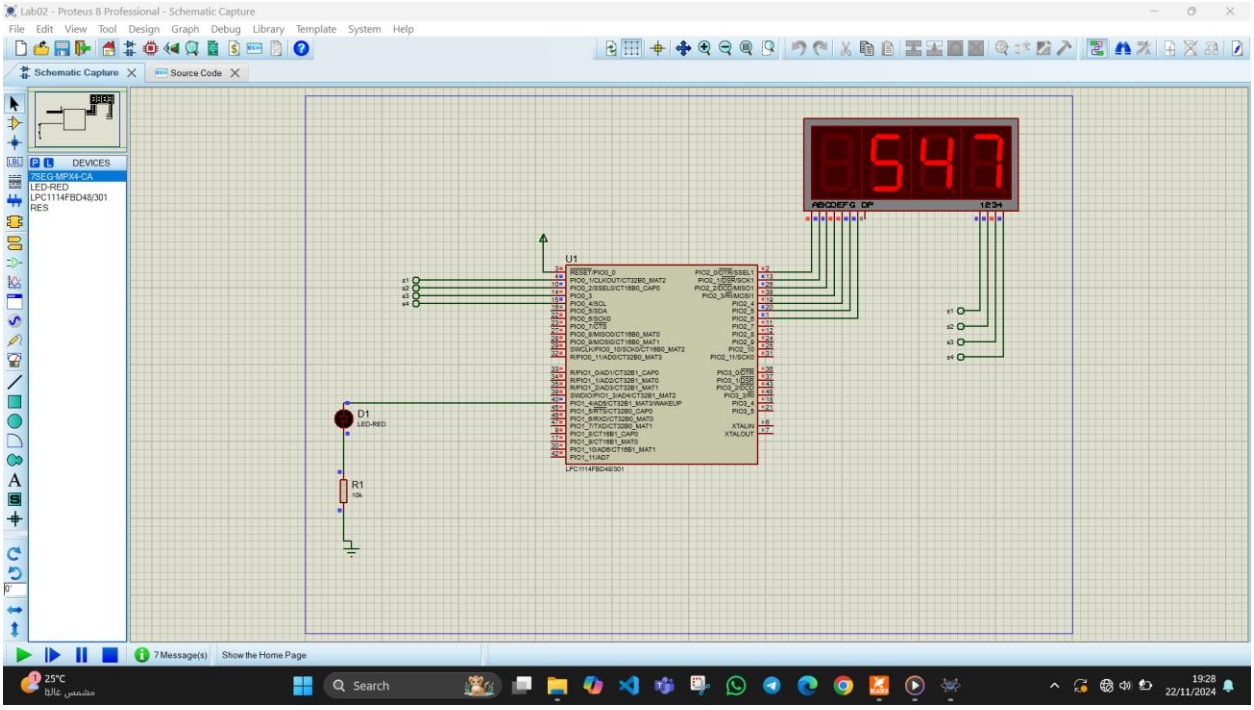
Circuit Connection:

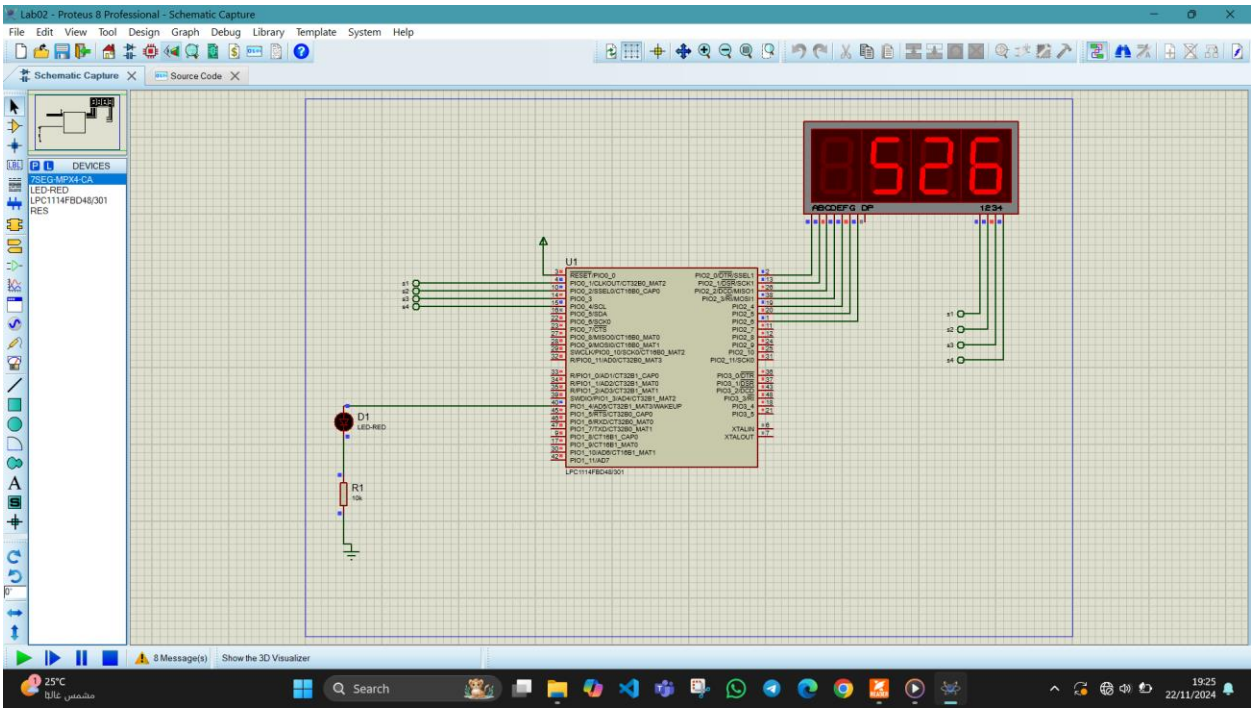


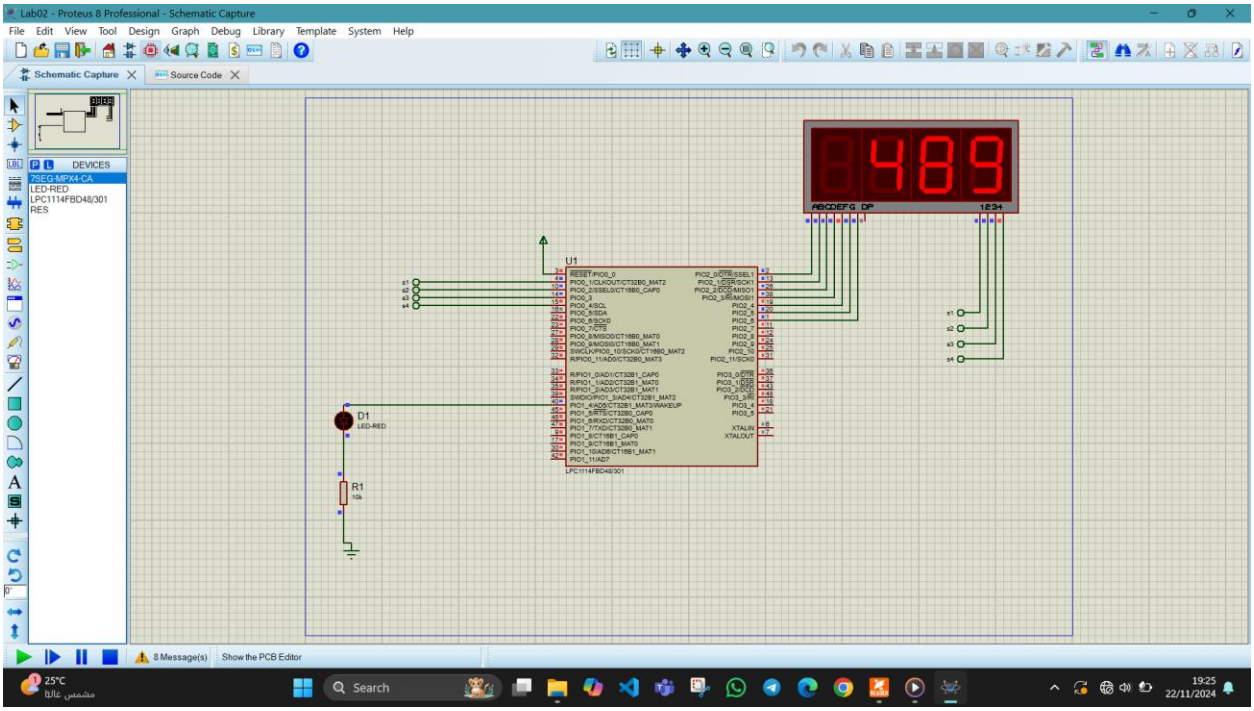


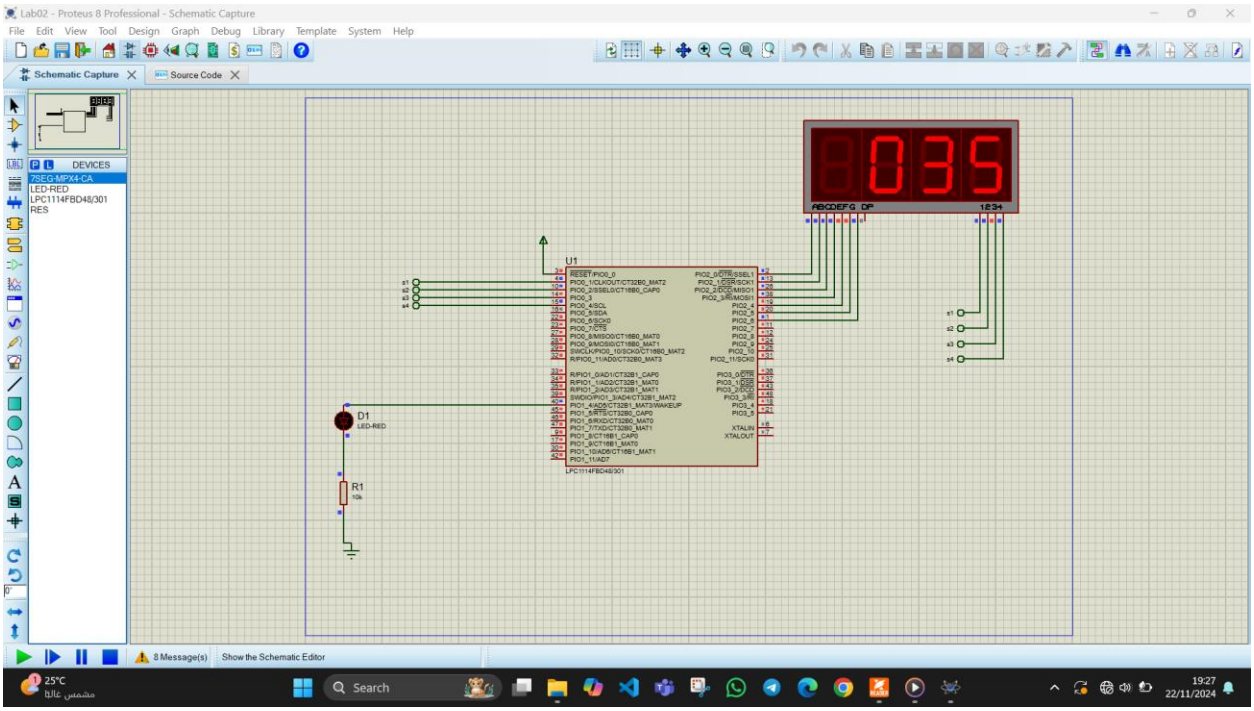
Running the circuit simulation:

Running the numbers on screen decreasingly..






Lab02 - Proteus 8 Professional - Schematic Capture
File Edit View Tool Design Graph Debug Library Template System Help
Schematic Capture
Source Code
DEVICES
7SEG-MPX4-CA
LED-RED
LPC1114FBD48/301
RES
U1
D1
LED-RED
R1
8 Message(s)
Show the PCB Editor
Search
19:25
22/11/2024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LED-RED
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RES
U1
D1
LED-RED
R1
8 Message(s)
Show the Schematic Editor
Search
19:27
22/11/2024

When it stops running: