

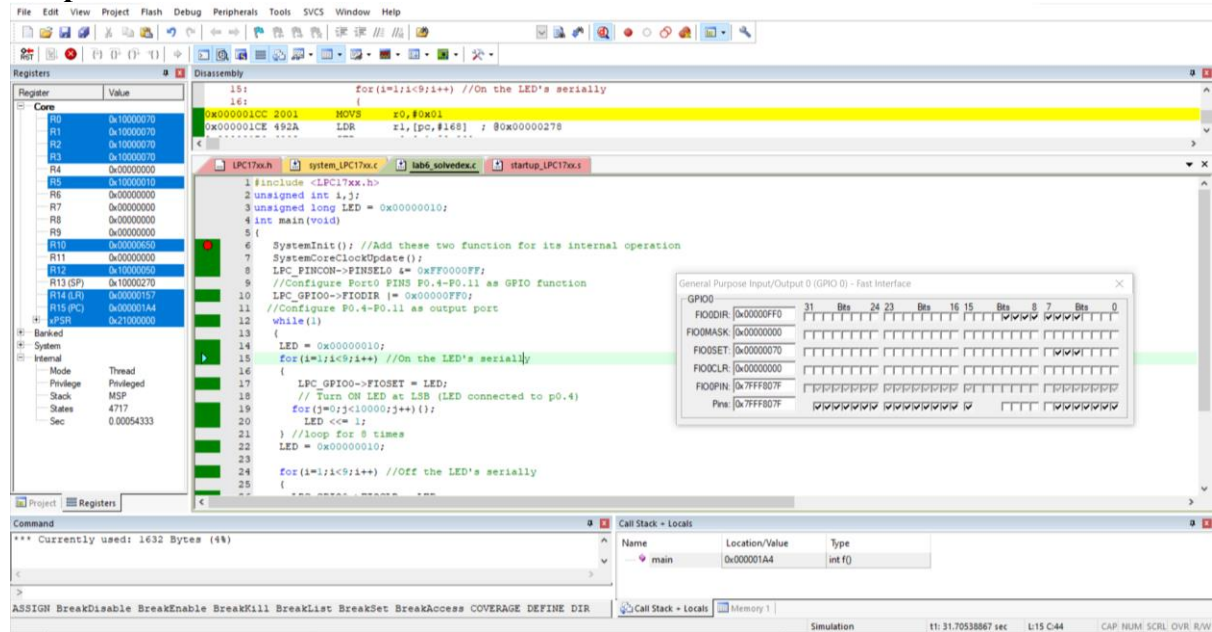
Solved Exercise:

Write a program to turn on/off the LEDs serially.

```
#include <LPC17xx.h>
unsigned int i,j;
unsigned long LED = 0x00000010;
int main(void)
{
    SystemInit(); //Add these two function for its internal operation
    SystemCoreClockUpdate();
    LPC_PINCON->PINSEL0 &= 0xFF0000FF;
    //Configure Port0 PINS P0.4-P0.11 as GPIO function
    LPC_GPIO0->FIODIR |= 0x00000FF0;
    //Configure P0.4-P0.11 as output port
    while(1)
    {
        LED = 0x00000010;
        for(i=1;i<9;i++) //On the LED's serially
        {
            LPC_GPIO0->FIOSET = LED;
            // Turn ON LED at LSB (LED connected to p0.4)
            for(j=0;j<10000;j++){ };
            LED <<= 1;
        } //loop for 8 times
        LED = 0x00000010;

        for(i=1;i<9;i++) //Off the LED's serially
        {
            LPC_GPIO0->FIOCLR = LED;
            //Turn OFF LED at LSB (LED connected to p0.4)
            for(j=0;j<10000;j++){ };
            LED <<= 1;
        }
    }
}
```

Output:



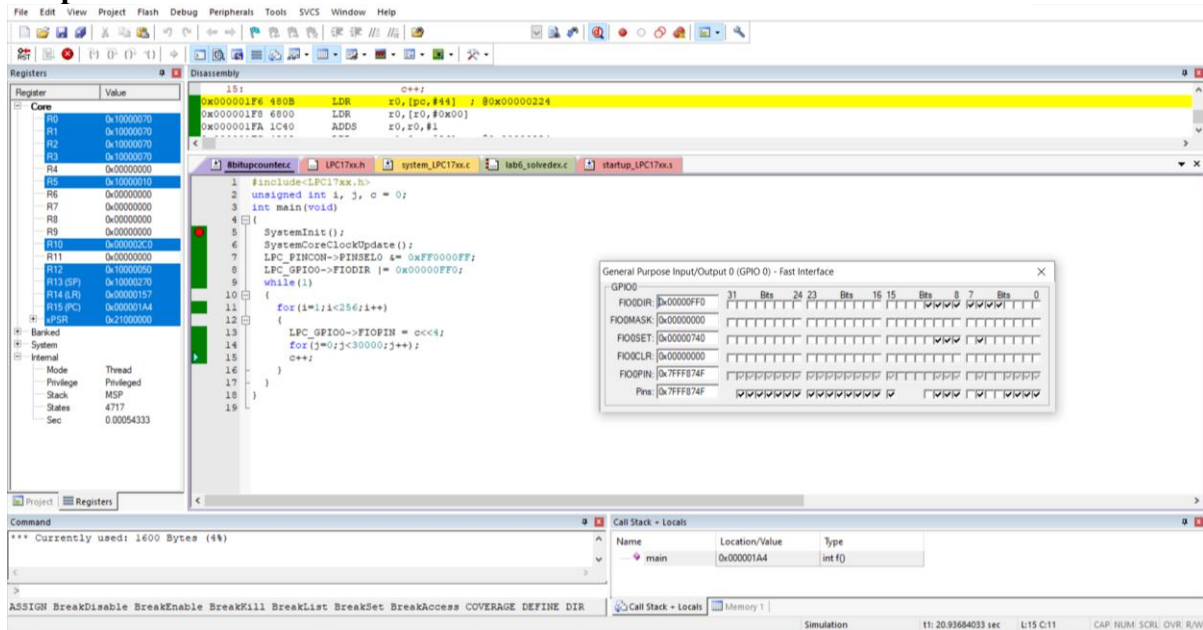
Lab Exercises:

1. Write a C program to display an 8-bit binary up counter on the LEDs

Program:

```
#include<LPC17xx.h>
unsigned int i, j, c = 0;
int main(void)
{
    SystemInit();
    SystemCoreClockUpdate();
    LPC_PINCON->PINSEL0 &= 0xFF0000FF;
    LPC_GPIO0->FIODIR |= 0x000000FF;
    while(1)
    {
        for(i=1;i<256;i++)
        {
            LPC_GPIO0->FIOPIN = c<<4;
            for(j=0;j<30000;j++);
            c++;
        }
    }
}
```

Output:

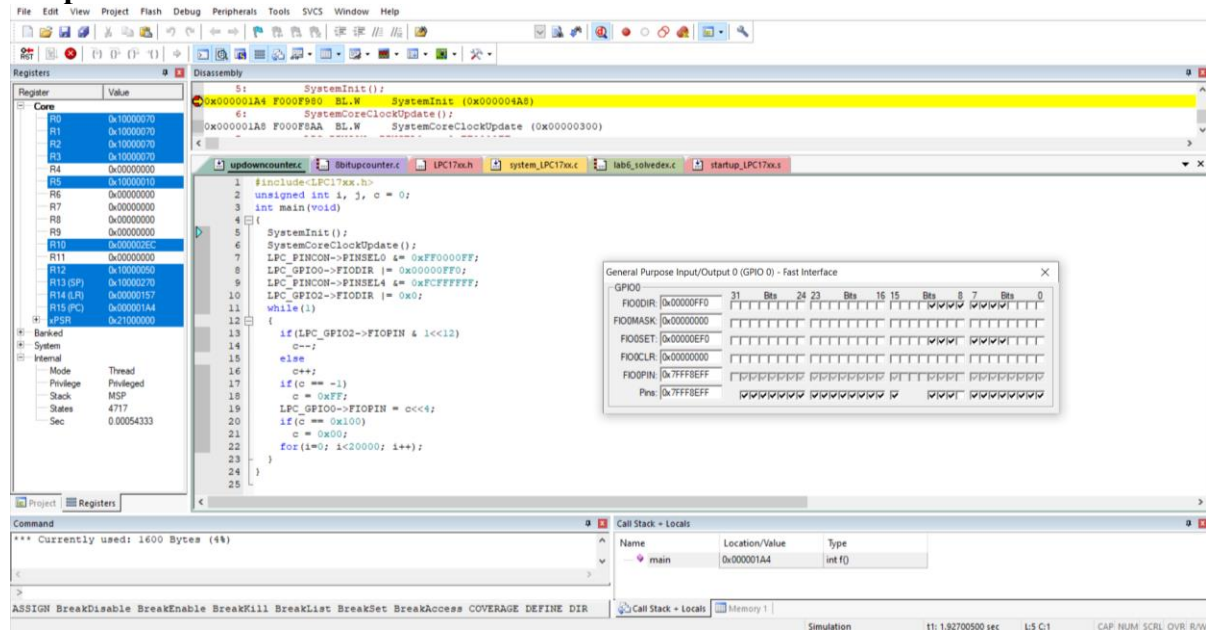


2. Write a C program to read a key and display an 8-bit up/down counter on the LEDs

Program:

```
#include<LPC17xx.h>
unsigned int i, j, c = 0;
int main(void)
{
    SystemInit();
    SystemCoreClockUpdate();
    LPC_PINCON->PINSEL0 &= 0xFF0000FF;
    LPC_GPIO0->FIODIR |= 0x00000FF0;
    LPC_PINCON->PINSEL4 &= 0xFCFFFFFF;
    LPC_GPIO2->FIODIR |= 0x0;
    while(1)
    {
        if(LPC_GPIO2->FIOPIN & 1<<12)
            c--;
        else
            c++;
        if(c == -1)
            c = 0xFF;
        LPC_GPIO0->FIOPIN = c<<4;
        if(c == 0x100)
            c = 0x00;
        for(i=0; i<20000; i++);
    }
}
```

Output:



3. Write a program to simulate an 8- bit ring counter with key press (SW2).

Program:

```
#include<LPC17xx.h>
unsigned int i,j;
unsigned long int LED;
int main(void)
{
    SystemInit();
    SystemCoreClockUpdate();
    LPC_PINCON->PINSEL0 &= 0xFF0000FF;
    LPC_GPIO0->FIODIR |= 0x00000FF0;
    while(1)
    {
        LED=0X00000010;
        for(i=1;i<9;i++)
        {
            LPC_GPIO0->FIOSET=LED;
            for(j=0;j<20000;j++);
            LPC_GPIO0->FIOCLR=LED;
            LED<<=1;
        }
    }
}
```

[illegible]

Simulation	t1: 2.55448900 sec	L:6 C:1	CAP	NUM	SCRL	OVR	R/W
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