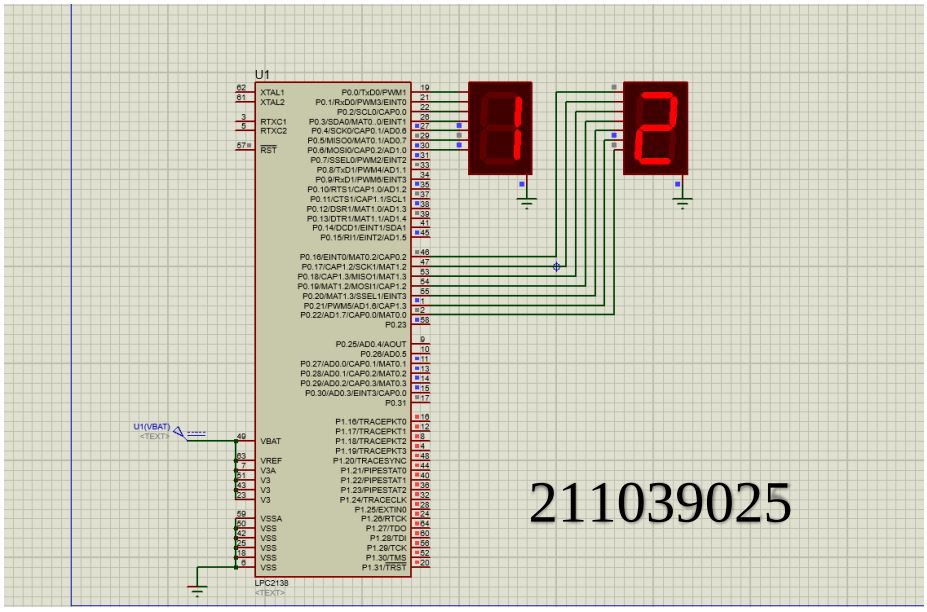
//2. Implement using Proteus and Keil, for the following: (15 marks) Implement a 00-99 counter(up counter) using two 7 segment display.

```
#include <lpc214x.h>


#define SIZE 10

int d1[SIZE]={0x3F, 0x06, 0x5B, 0x4F, 0x66, 0x6D, 0x7D, 0x07, 0x7F, 0x6F};

int d2[SIZE]={0x003F0000, 0x00060000, 0x005B0000, 0x004F0000, 0x00660000, 0x006D0000,
0x007D0000, 0x00070000, 0x007F0000, 0x006F0000};


void pll();

void msecdelay(int x);

int main(void)

{

        int i = 0, j = 0;

        PINSEL0 = 0x00000000;           // Cong P0L as GPIO

        PINSEL1 = 0x00000000;           // Cong P0H as GPIO

        IO0DIR = 0x00FF00FF;                    // P0.0 to P0.6 D2 and P0.16 to P0.22 D1


        while(1)

        {


                        for(i=0;i<SIZE;i++)

                        {

                                IO0SET = d1[i];

                                for(j=0; j<SIZE; j++)

                                {

                                                IO0PIN = (d1[i] | d2[j]);

                                                msecdelay(20);

                                                IO0PIN =  (d1[i] & 0x00FF0000);

                                }


                        }
```

```
	}


	return 0;
}



void pll()
{
	PLL0CON = 0x01;				//PLL Enable
	PLL0CFG = 0x24;					//F-osc=12Mhz,CCLK=60Mhz,PCLK=60MHz
==> Calculated M = 5 (Value to be loaded 4) and P = 2.5 (Value to be loaded 2)
	PLL0FEED = 0xAA;
	PLL0FEED = 0x55;

	while(!(PLL0STAT&(1<<10)));		// Wait till PLL gets lock
	PLL0CON = 0x03;					// PLL EN and Connect
	PLL0FEED = 0xAA;
	PLL0FEED = 0x55;
	VPBDIV = 0x01;			// PCLK = CCLK
}

void msecdelay(int x)
{
   T0CTCR=0x0;			//Select Timer Mode
   T0TCR=0x00;		//Timer off
   T0PR=59999;		//Prescaler value for 1ms
   T0TCR=0x02;		//Timer reset
   T0TCR=0x01;		//Timer ON
   while(T0TC < x);
   T0TCR=0x00;		//Timer OFF
```

```
    T0TC=0;                 //Clear the TC value. This is Optional.

}
```



//1. Connect two switches (SW1 and SW2) and two LED. On press of first switch SW1, the led 1 should on and off with a delay of 1 sec and other switch SW2, LED2 should be on and off at 500 ms.

```
#include<lpc214x.h>
void delay(unsigned int z);
void pll();
int main(void)
{
   IO0DIR=0xffffffff;
   IO1DIR = 0x0;
   pll();
   while(1) {
    if((IO1PIN & (1<<16)) ==0)
      {
      IO0SET=0x000000ff;
      delay(1000);
      IO0CLR=0x000000ff;
      delay(1000);
      }
      if((IO1PIN & (1<<17)) ==0)
      {
      IO0SET=0x0000ff00;
      delay(500); //500msec delay
      IO0CLR=0x0000ff00;
      delay(500);
      }
   }
}
void pll()
{
   PLL0CON=0x01;
   PLL0CFG=0x24;
```

```
    PLL0FEED=0xaa;
    PLL0FEED=0x55;
    while(!(PLL0STAT&(1<<10)));
    PLL0CON=0x03;
    PLL0FEED=0xaa;
    PLL0FEED=0x55;
    VPBDIV=0x01;
}
void delay(unsigned int z)
{
    T0CTCR=0x0;                         //Select Timer Mode
    T0TCR=0x00;             //Timer off
    T0PR=59999;             //Prescaler value for 1ms
    T0TCR=0x02;             //Timer reset
    T0TCR=0x01;             //Timer ON
    while(T0TC<z);
    T0TCR=0x00;             //Timer OFF
    T0TC=0;                 //Clear the TC value. This is Optional.
}
```