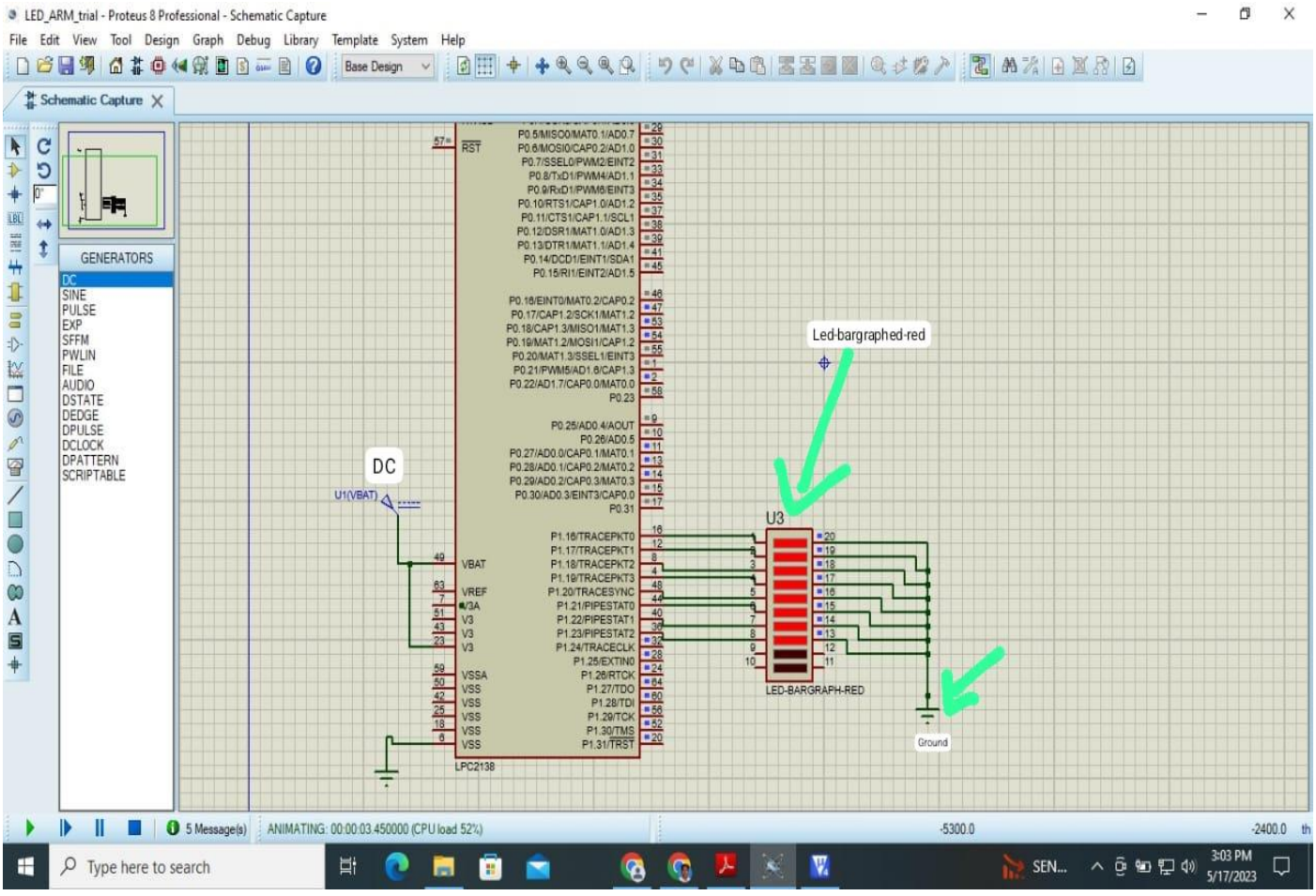
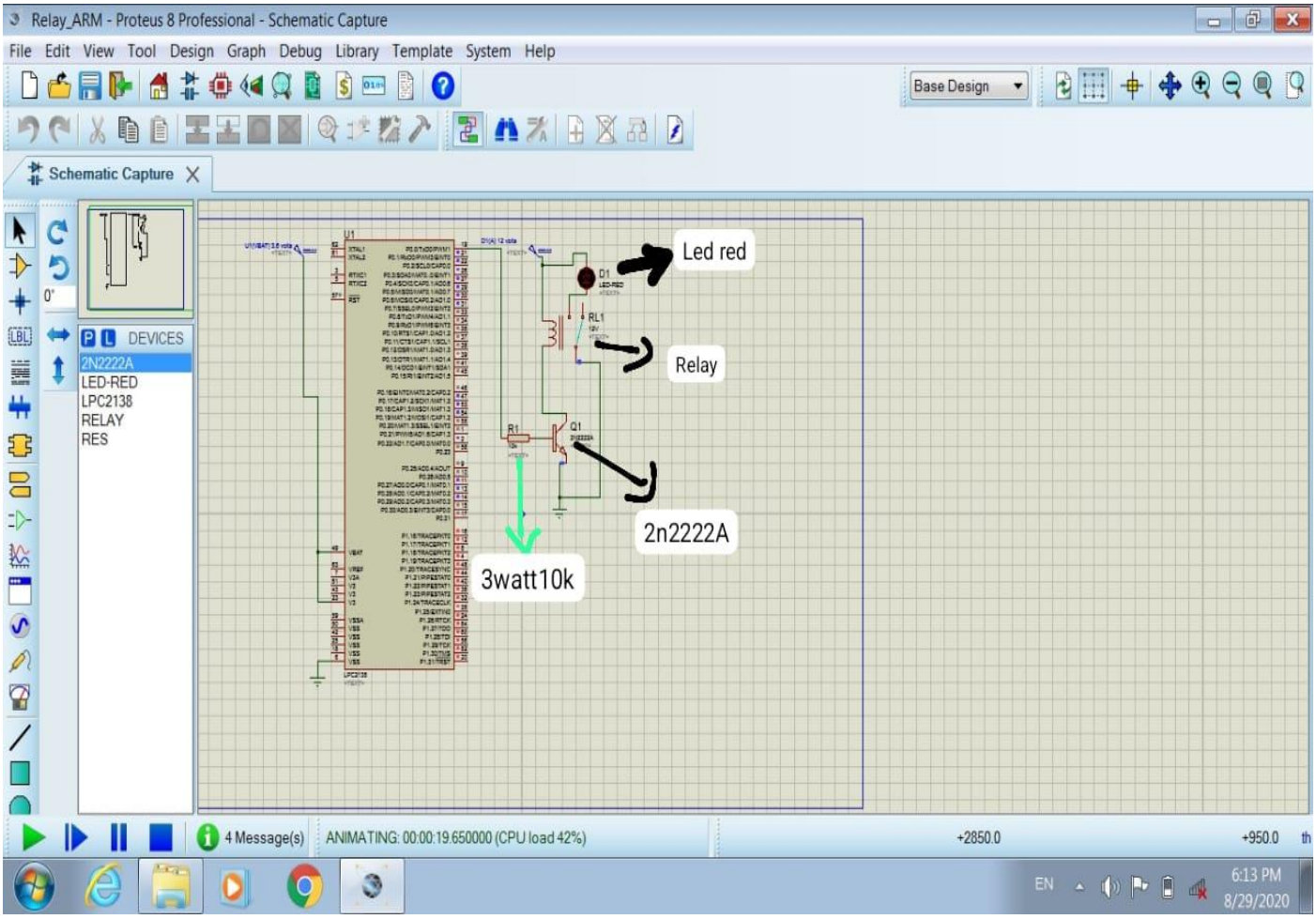
Pract 4 : LED Interfacing with ARM Controller

```
#include <lpc21xx.h>
 void delay (unsigned int);
 int main()
        {
        IODIR1 = 0Xffffffff;
        PINSEL0 = 0X00000000;
        PINSEL1 = 0XFFFFFFFf;

        while(1)
        {
                IOSET1 = 0X00ff0000;
                delay(1000);
                IOCLR1 = 0X00fF0000;
                delay(1000);

                }

                }
                void delay(unsigned int k)
                {
                        int i,j;

                        for(i=0; i<k; i++)
                        for(j=0;j<=100;j++);

                        }
```



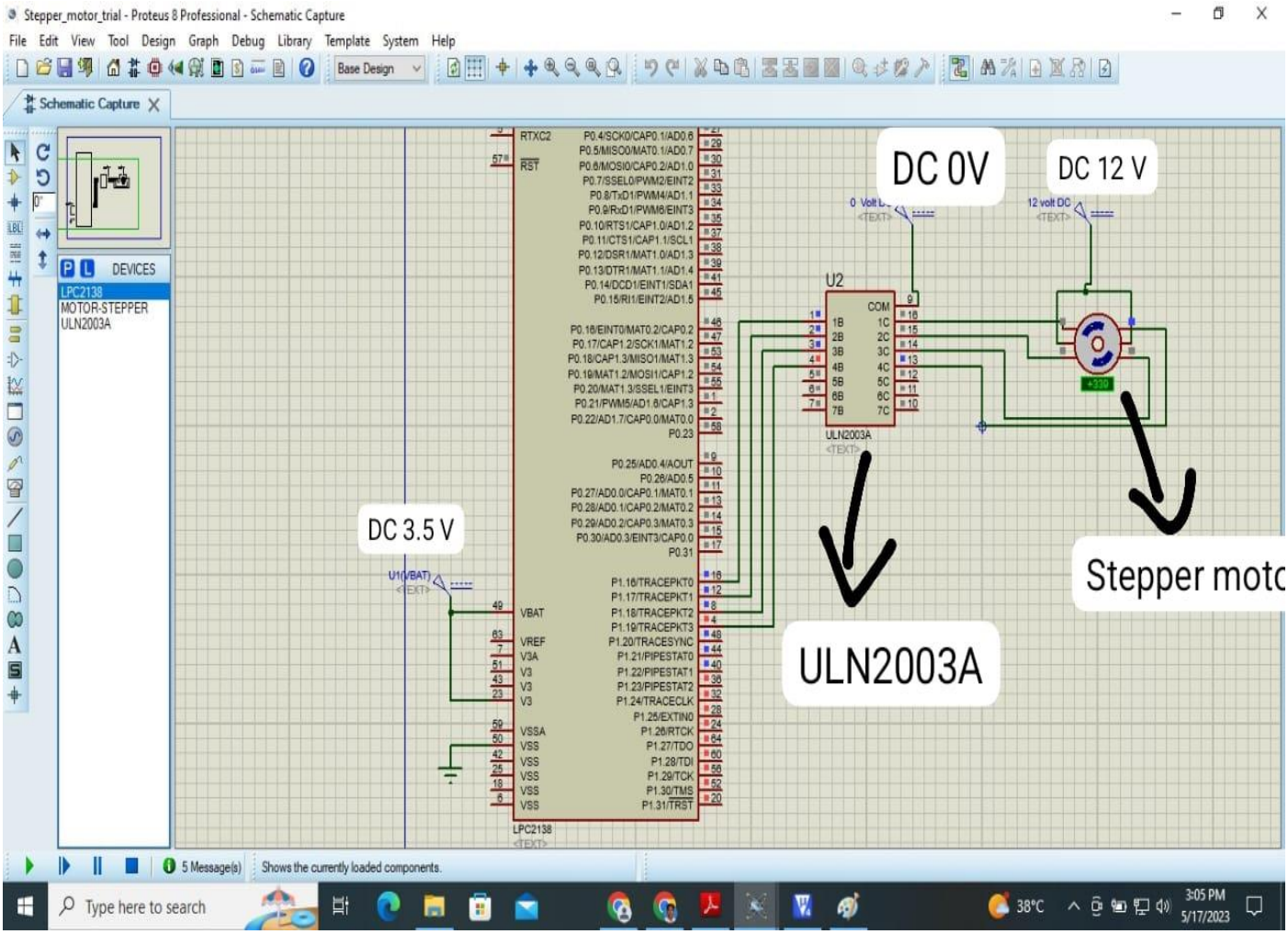
// Pract 5 : Relay and LED Interfacing with ARM Controller

```
#include <lpc213x.h>
void delay (unsigned int);
int main()
        {
        IODIR0 = 0X00000001;
        PINSEL0 = 0XFFFFFFFC;
        PINSEL1 = 0XFFFFFFFf;

        while(1)
        {
                IOSET0 = 0X00000001;
                delay(100);
                IOCLR0 = 0X00000001;
                delay(100);

                }

                }
                void delay(unsigned int k)
                {
                        int i,j;

                        for(i=0; i<k; i++)
                        for(j=0;j<=1000;j++);

                        }
```



Pract 6 : Interfacing stepper motor with ARM Controller Clockwise rotation

```
#include <LPC214X.H>
void delay(unsigned int count)
{
  unsigned int i ,j= 0;
  for(i = 0; i <= count; i ++)
  for(j = 0; j <= 10; j ++);
}
unsigned long i;
int main()
{
  IODIR1 = 0x00FF0000;
 // i = 0x00110000;
  while(1)
  {
    IOSET1 = 0x00880000;
       delay(10000);
       IOCLR1 = 0x00FF0000;
       IOSET1 = 0x00440000;
       delay(10000);
       IOCLR1 = 0x00FF0000;
       IOSET1 = 0x00220000;
       delay(10000);
       IOCLR1 = 0x00FF0000;
       IOSET1 = 0x00110000;
       delay(10000);
       IOCLR1 = 0x00FF0000;
  }
}
```

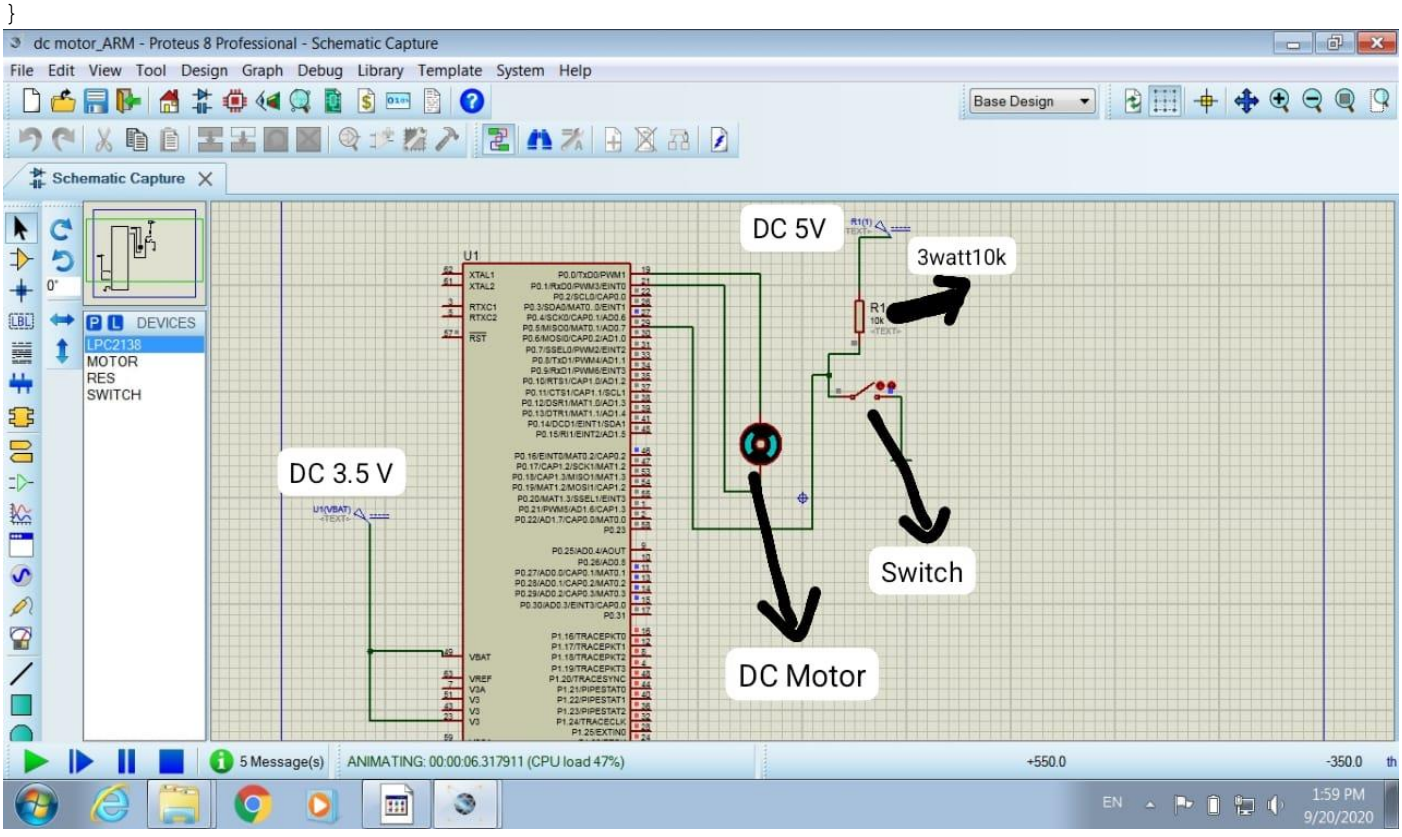


Anticlockwise step rotation

```
#include <LPC214X.H>
void delay(unsigned int count)
{
  unsigned int i,j = 0;
  for(i = 0; i <= count; i ++)
  {
  for(j=0;j<=5;j++);
  }
}
int main()
{
  IODIR1 = 0x00FF0000;

  while(1)
  {
    IOSET1 = 0x00FF0000;
        delay(10000);
        IOCLR1 = 0x00FF0000;
//      IOSET1 = 0x00020000;
        delay(10000);
//      IOCLR1 = 0x00FF0000;
//      IOSET1 = 0x00040000;
//      delay(10000);
//      IOCLR1 = 0x00FF0000;
//      IOSET1 = 0x00080000;
//      delay(10000);
//      IOCLR1 = 0x00FF0000;
 }
}
```

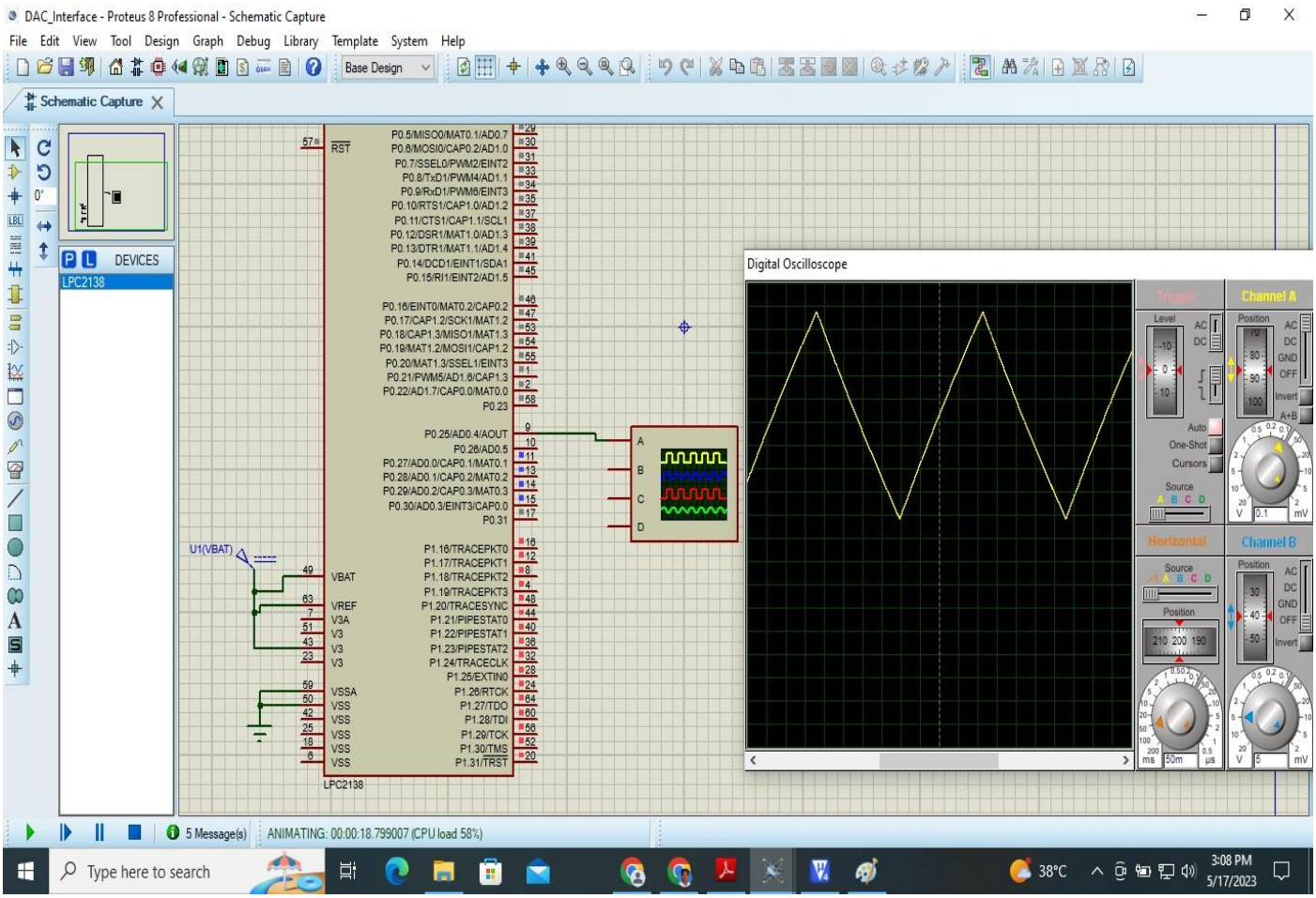
Pract 7 : Interfacing switch & DC motor with ARM Controller

```
#include <lpc213x.h>
// DC motor & Switch Interface
//DC motor connected to P0.0 & P0.1 , Switch to P0.5
 int getPinState(int pinNumber);
int  main()
{
       IODIR0 |= 0X00000003;   // P0.0 & P0.1 as Output pins and  P0.5 as Input
Pin
       PINSEL0 &= 0XFFFFF3F0;       // P0.0 , P0.1 , P0.5 as GPIO Pins

       while(1)
       {
          if (getPinState(5))
         {
        IOSET0 = 0X00000001; // P0.0 Logic High (data bit 1 i.e. high voltage
level)
        IOCLR0 = 0X00000002; // P0.1 Logic LOW (data bit 0  i.e. low voltage
level)
                }
        else
        {
              IOSET0 = 0X00000002;  //P0.1 High      ( data bit 1 i.e. high voltage
level)
              IOCLR0 = 0X00000001;  // P0.0 LOW (data bit 0  i.e. low voltage
level)
               }
        }
  }
       int getPinState(int pinNumber)
{
  // Read the current state of all pins in GPIO block 0
  int pinBlockState = IOPIN0;
  // Read the value of 'pinNumber P0.5 '
  int pinState = (pinBlockState & (1 << pinNumber));// ? 1 : 0;
  // Return the value of pinState
  return pinState;
}
```



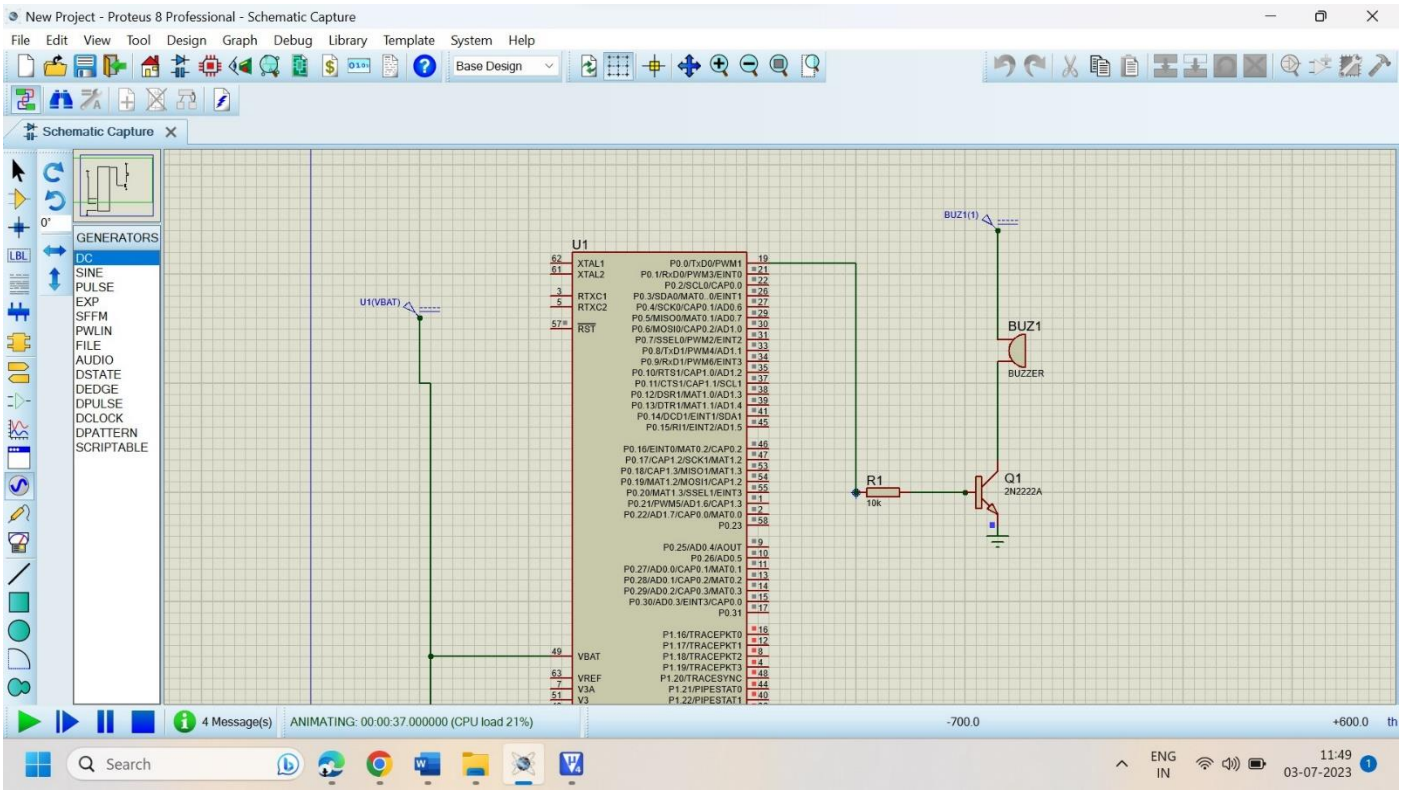
Pract 8 : Interfacing DAC with ARM Controller

```
#include <LPC213X.H>  // DAC triangular wave genration
#include<math.h>
delay()
{int i=0;for(i=0;i<400;i++);}
void triangle()        // func to generate  triangular wave
{
unsigned int i;
for(i=0;i<0x0ff;i++)
{
       DACR=0x00000000|(i<<6);          // left shift to increase  contents      of
DAC register
       delay();
}

for(i=0x0ff;i>0;i--)
{
       DACR=0x00000000|(i<<6);
       delay();
}
}
void main(void)
{
PINSEL1 =0x00080000;  // configure GPIO pin P0.25 as Aout for DAC operations
                                          // by writing 10 at bit 19 & 18 of
PINSEL1 register
while(1)
{

                     triangle();
}
}
```



Pract 9 : Interfacing Buzzer with ARM Controller

```
#include <lpc214x.h>
void delay (unsigned int);
int main()
        {
        IODIR0 = 0X00000001;
        PINSEL0 = 0XFFFFFFFC;
        PINSEL1 = 0XFFFFFFFf;

        while(1)
        {
                IOSET0 = 0X00000001;
                delay(100);
                IOCLR0 = 0X00000001;
                delay(100);

                }

                }
                void delay(unsigned int k)
                {
                        int i,j;

                        for(i=0; i<k; i++)
                        for(j=0;j<=1000;j++);

                        }
```



Pract 1 : Add of 32 Bit No

```
; Addition of 32 bit nos
 AREA ADD32,CODE,READONLY ; indicates start of a new data or code section
                          ;define program memory as ROM
ENTRY                     ; Declare an entry point where the program execution starts
main
 ldr r0,=value1           ;load ro with address of value1
ldr r1,[r0]               ; load r1 with value1 from memory
ldr r0,=value2            ;load ro with address of value2
ldr r2,[r0]               ; load r2 with value2 from memory
adds r3,r1,r2             ;addition of r1 & r2 , result in r3
ldr r0,=result            ;load ro with address of result
str r3,[r0]               ; store r3 contents to result
stop b stop               ;keep executing jump instrn.
value1 DCD 0x11111144     ; Define Constant Word , No's. in Little Endian format
value2 DCD 0x22222255     ; Allocate one or more words (32 bits) of data
 AREA Result,DATA,READWRITE  ;define data memory as RAM result DCD 0 ; initial sum
 END                      ; Designate the end of a source file
```

// Pract 2 : Add of 64 Bit No

```
;addition of 64 bit nos
 AREA ADD64,CODE,READONLY ; define program memory as ROMENTRY
main
 ldr r0,=value1           ;load ro with address of value1
ldr r1,[r0]               ; load r1 with value1 lower word from memory
 ldr r2,[r0,#4]           ; load r2 with value1 higher word from memory
ldr r0,=value2            ;load ro with address of value2
ldr r3,[r0]               ; load r3 with value2 lower word from memory
ldr r4,[r0,#]             ; load r4 with value2 higher word from memory
adds r6,r1,r3             ;add lower 32 bit data, result in r6
adc r5,r2,r4              ;add upper 32 bit data, result in r5
ldr r0,=result            ;load ro with address of result
str r6,[r0]               ; store lower 32 bit of result
str r5,[r0,#4]            ; store higher 32 bit of result
```

```
stop b stop                          ;keep executing jump instrn.
value1 DCD 0x33333333,0x11111111     ;No's. in Little Endian format
value2 DCD 0x22222222,0x55555555
 AREA Result,DATA,READWRITE  ;define data memory as RAM
result DCD 0 ; initial sum
 END
```

Pract 3 : Count Length of String

```
;Program to find Length of string
 AREA P1,CODE,READONLY ; start of a new code section.
ENTRY       ; entry point where the program execution starts
main
 ldr r0,=datastring                  ; Initalize pointer to string of characters
ldr r3,=count                        ; Initalize pointer to result(Total length)
eor r1,r1,r1                         ; clear R1 to count length (up counter)
l1 ldrb r2,[r0],#1                   ;Load R2 bytewise ,R0 as pointer with post increment
cmp r2,#0                            ;Check end of string for every charc.
beq l3                               ;If it is end of string then goto L3
add r1,r1,#1                         ;otherwise Increment length counter
bal l1                               ; goto next charc. byte
l3 str r1,[r3]                       ;store length to memory location named as count
l2 bl l2 ;stop
datastring DCB "witsolapu",0     ; Allocate one or more bytes (8 bits) of data
 AREA Result,DATA,READWRITE  ;start of a new data section.
count DCB 0                          ; Allocate one or more bytes (8 bits) of data
 END                                 ; Designate the end of a source file
```