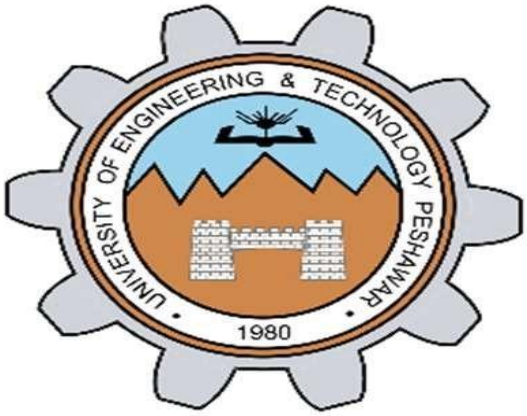


Name: Muhammad Uzair

Reg No: 19pwcse1761

Section: A

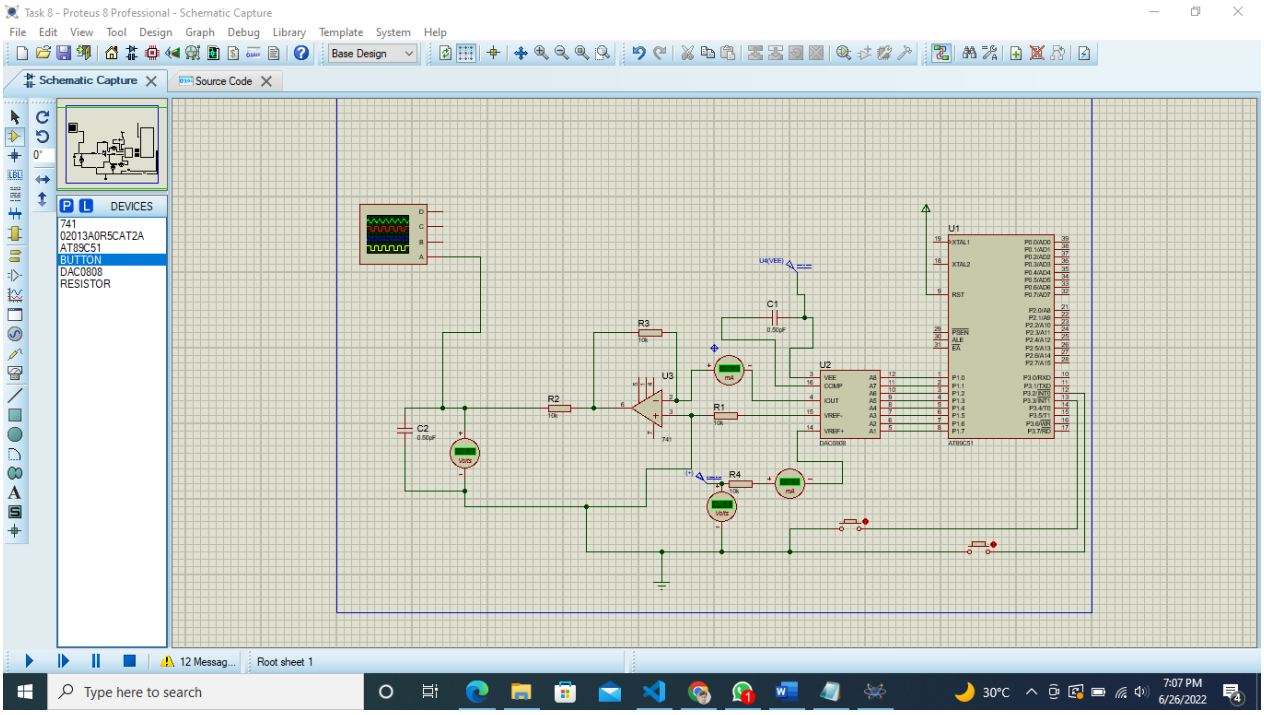
Code:

Code:

```
#include <reg51.h>
#include <stdio.h>
int wave_sts=0;

void Delay(unsigned int x)
{    unsigned int i;
  for(i=0;i<x;i++);

}

void external_interupt_initialize()
{
  IE=0x81; //external interupt 0 is enabled
  IT0=1; // Select Ext. interrupt0 on falling edge }

void ext(void) interrupt 0  //ISR for external interrupt 0;
{
   wave_sts++;
          if(wave_sts==4)
          {
             wave_sts=0;
          }
}

void main(void)
{
          external_interupt_initialize();
          while(1)
          {
           if(wave_sts==0)         {
//sine wave
               unsigned int

              sine[]={128,156,192,226,238,255,238,226,192,128,64,32,6,4,0,16,32,64};
int i;

               for(i=0;i<18;i++)
               {
                     P1=sine[i];
                     Delay(400);
               }
```

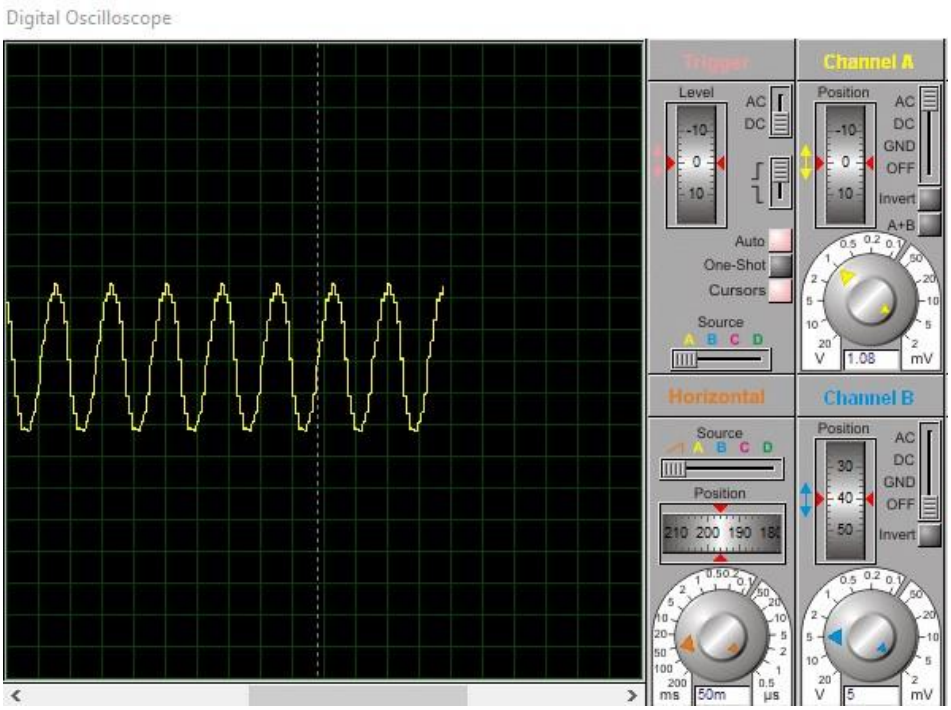
```
            }
            else if(wave_sts==1)  //saw tooth
            {
              P1=0;       P1 =
          0xFF;       while(P1
          != 0x00)
              {
                  P1--;
                  Delay(40);              //Delay
              }
            }

            else if(wave_sts==2) //Square Wave
            {
              P1 = 0x00;
              P1 = 0xFF;
              Delay(4400);              //Delay
              P1 = 0x00;
              Delay(4400);              //Delay
            }

            else          //triangular wave
            {
                P1 = 0x00;
                while(P1 != 0xFF)
              {
                  P1++;
                  Delay(45);    //Delay       }

              while(P1 != 0x00)
              {
                  P1--;
                  Delay(45);              //Delay
          }

            }
    }

}
```

Schematic:

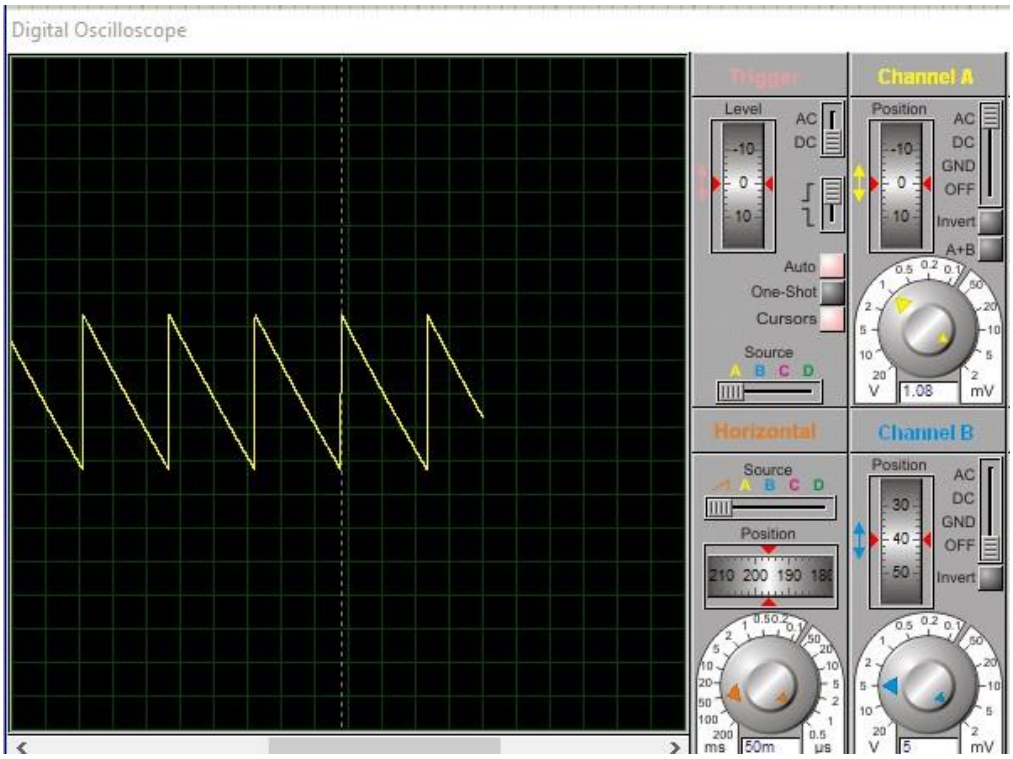


Output:

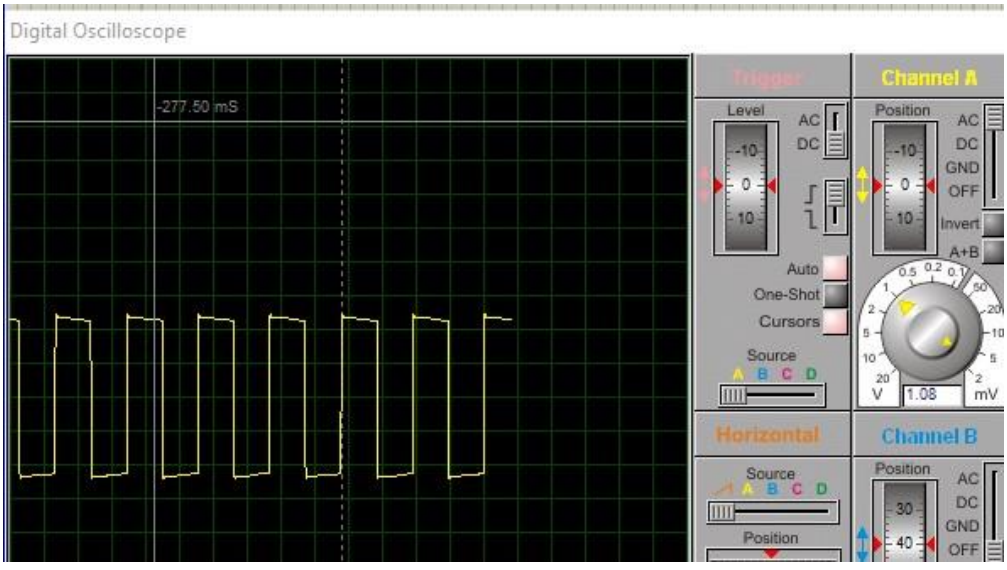
Sine Wave:



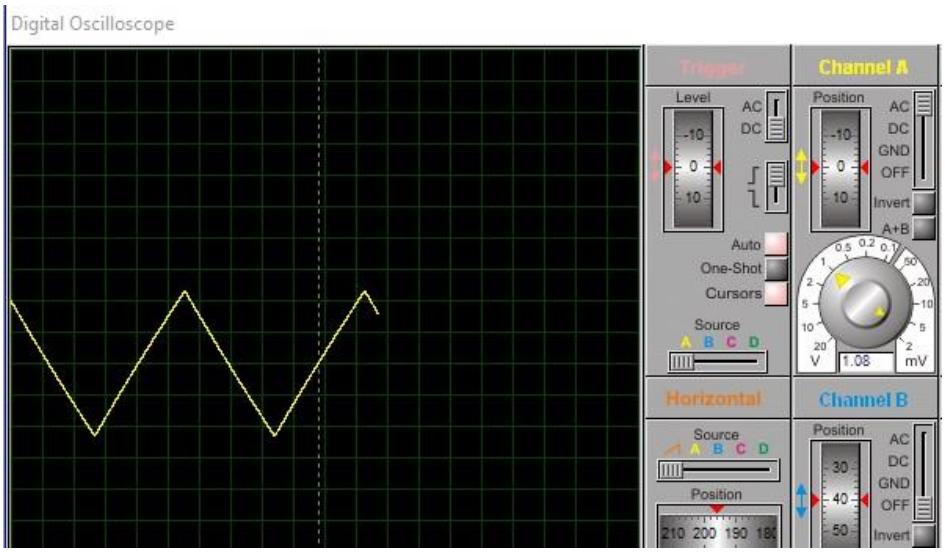
Sawtooth Wave:



Square Wave:



Triangular Wave:


Digital Oscilloscope
Trigger
Level
AC
DC
Auto
One-Shot
Cursors
Source
A B C D
Channel A
Position
AC
DC
GND
OFF
Invert
A+B
V
1.08
mV
Horizontal
Source
A B C D
Position
210 200 190 180
Channel B
Position
AC
DC
GND
OFF
Invert