STATE UNIVERSITY OF BANGLADESH (SUB)

Course Code: CSE-0406

Course Name: Computer Peripherals and Interfacing Lab

Semester: Summer-2021

Submitted to:

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Arduino Code:

Assignment: Design a simple calculator using Proteus and Arduino. Use LCD as a display device (The buttons pressed will be shown on LCD).

```
#include <LiquidCrystal.h>
#include <Keypad.h>
const byte ROWS = 4; // Four rows
const byte COLS = 4; // Four columns
char keys[ROWS][COLS] = {
  {'7','8','9','D'},
  {'4','5','6','C'},
  {'1','2','3','B'},
  {'*','0','#','A'}
};
byte rowPins[ROWS] = { 7, 6, 5, 4 };// Connect keypad ROW0, ROW1, ROW2 and ROW3 to these Arduino pins.
byte colPins[COLS] = { 3, 2, 1, 0 }; // Connect keypad COL0, COL1 COL2 and COL3 to these Arduino pins.
Keypad kpd = Keypad( makeKeymap(keys), rowPins, colPins, ROWS, COLS ); //  Create the Keypad
const int rs = 8, en = 9, d4 = 10, d5 = 11, d6 = 12, d7 = 13; //Pins to which LCD is connected
LiquidCrystal lcd(rs, en, d4, d5, d6, d7);
 long Num1,Num2,Number;
 char key,action;
 boolean result = false;
```

```
 void setup() {
  lcd.begin(16, 2);
  lcd.print("Mufrat Tasif");
  lcd.setCursor(0, 1);
  lcd.print("Let's Legin");
   delay(2000); //Wait for display to show info
    lcd.clear(); //Then clean it
}
void loop() {
key = kpd.getKey(); //storing pressed key value in a char
if (key!=NO_KEY)
DetectButtons();
if (result==true)
CalculateResult();
DisplayResult();
}
void DetectButtons()
{
     lcd.clear();
    if (key=='*')
    {Serial.println ("Button Cancel"); Number=Num1=Num2=0; result=false;}
        if (key == '1') //If Button 1 is pressed
    {Serial.println ("Button 1");
    if (Number==0)
    Number=1;
    else
    Number = (Number*10) + 1; //Pressed twice
    }
```

```
 if (key == '4') //If Button 4 is pressed
{Serial.println ("Button 4");
if (Number==0)
Number=4;
else
Number = (Number*10) + 4; //Pressed twice
}
    if (key == '7') //If Button 7 is pressed
{Serial.println ("Button 7");
if (Number==0)
Number=7;
else
Number = (Number*10) + 7; //Pressed twice
}
  if (key == '0')
{Serial.println ("Button 0"); //Button 0 is Pressed
if (Number==0)
Number=0;
else
Number = (Number*10) + 0; //Pressed twice
}
  if (key == '2') //Button 2 is Pressed
{Serial.println ("Button 2");
 if (Number==0)
Number=2;
else
Number = (Number*10) + 2; //Pressed twice
}
```

```
  if (key == '5')
{Serial.println ("Button 5");
 if (Number==0)
Number=5;
else
Number = (Number*10) + 5; //Pressed twice
}
    if (key == '8')
{Serial.println ("Button 8");
 if (Number==0)
Number=8;
else
Number = (Number*10) + 8; //Pressed twice
}
  if (key == '#')
{Serial.println ("Button Equal");
Num2=Number;
result = true;
}
    if (key == '3')
{Serial.println ("Button 3");
 if (Number==0)
Number=3;
else
Number = (Number*10) + 3; //Pressed twice
}
    if (key == '6')
{Serial.println ("Button 6");
```

```
  if (Number==0)
  Number=6;
  else
  Number = (Number*10) + 6; //Pressed twice
  }
   if (key == '9')
  {Serial.println ("Button 9");
  if (Number==0)
  Number=9;
  else
  Number = (Number*10) + 9; //Pressed twice
  }
    if (key == 'A' || key == 'B' || key == 'C' || key == 'D')
{
  Num1 = Number;
  Number =0;
  if (key == 'A')
  {Serial.println ("Addition"); action = '+';}
   if (key == 'B')
  {Serial.println ("Subtraction"); action = '-'; }
   if (key == 'C')
  {Serial.println ("Multiplication"); action = '*';}
   if (key == 'D')
  {Serial.println ("Devesion"); action = '/';}
  delay(100);
}
}
```

```
void CalculateResult()
{
  if (action=='+')
    Number = Num1+Num2;
  if (action=='-')
    Number = Num1-Num2;
  if (action=='*')
   Number = Num1*Num2;
  if (action=='/')
    Number = Num1/Num2;
}
void DisplayResult()
{
  lcd.setCursor(0, 0);
  lcd.print(Num1); lcd.print(action); lcd.print(Num2);
    if (result==true)
  {lcd.print(" ="); lcd.print(Number);}
    lcd.setCursor(0, 1);
  lcd.print(Number);
}
```

Screenshot:

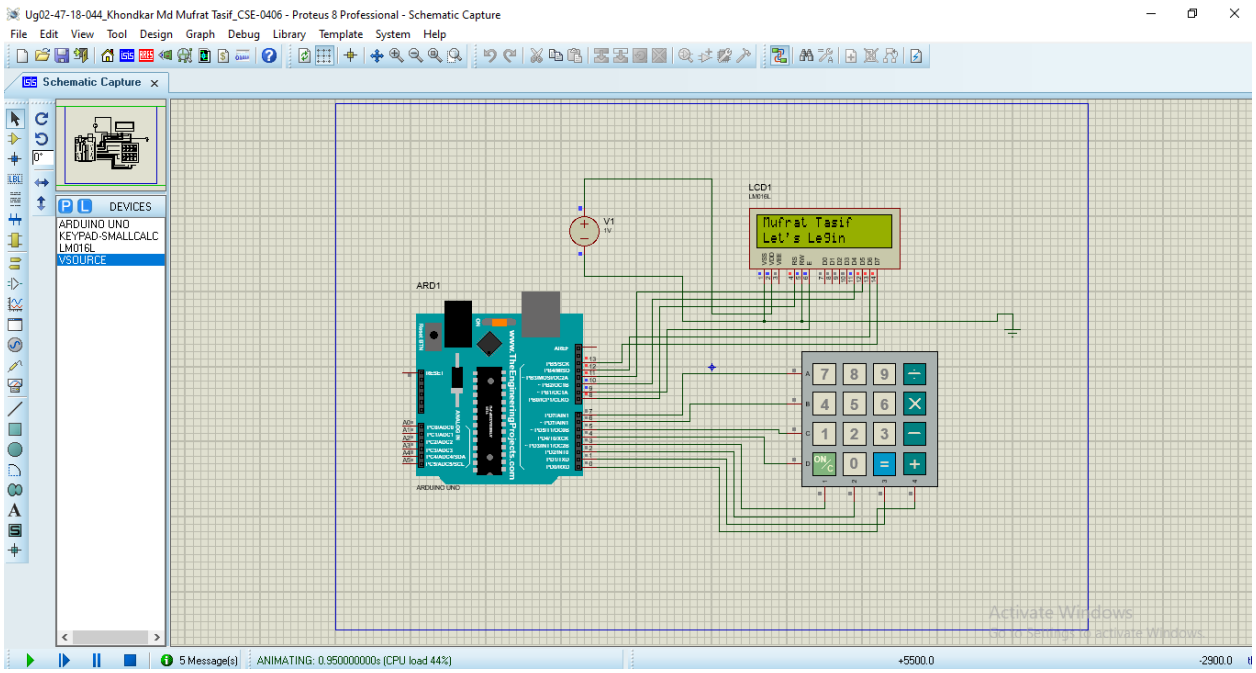

Fig no: 01 (the screen)

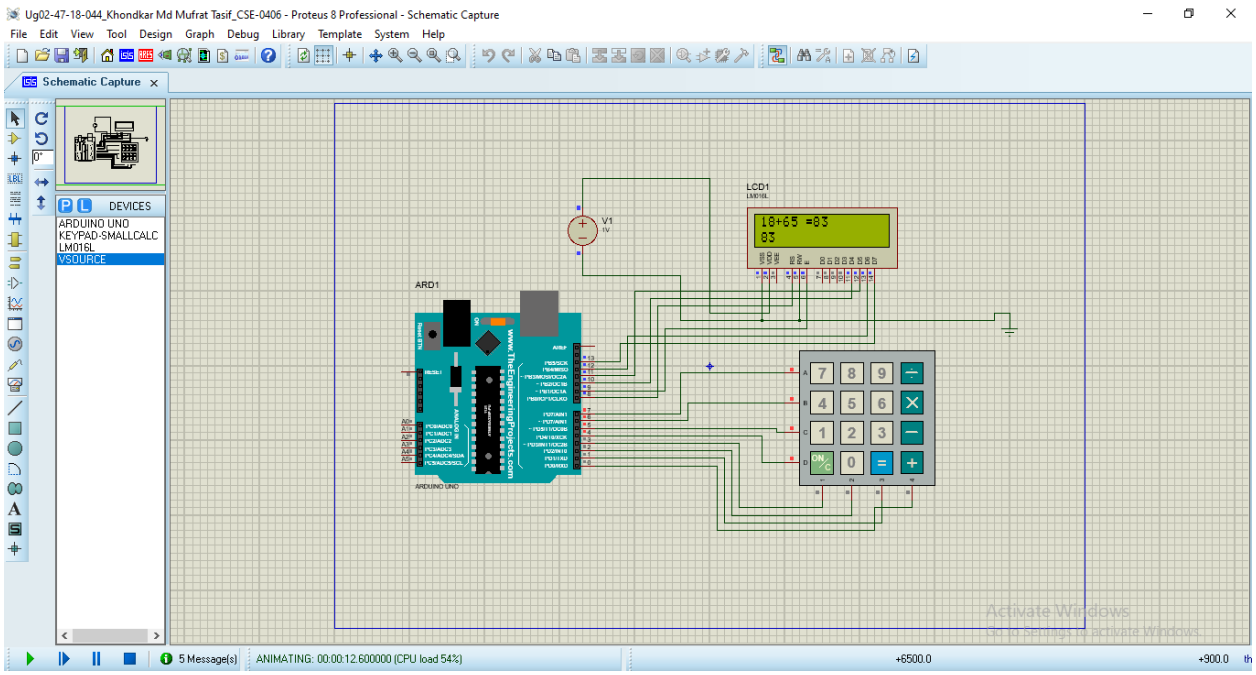

Fig no: 02 (Addition)

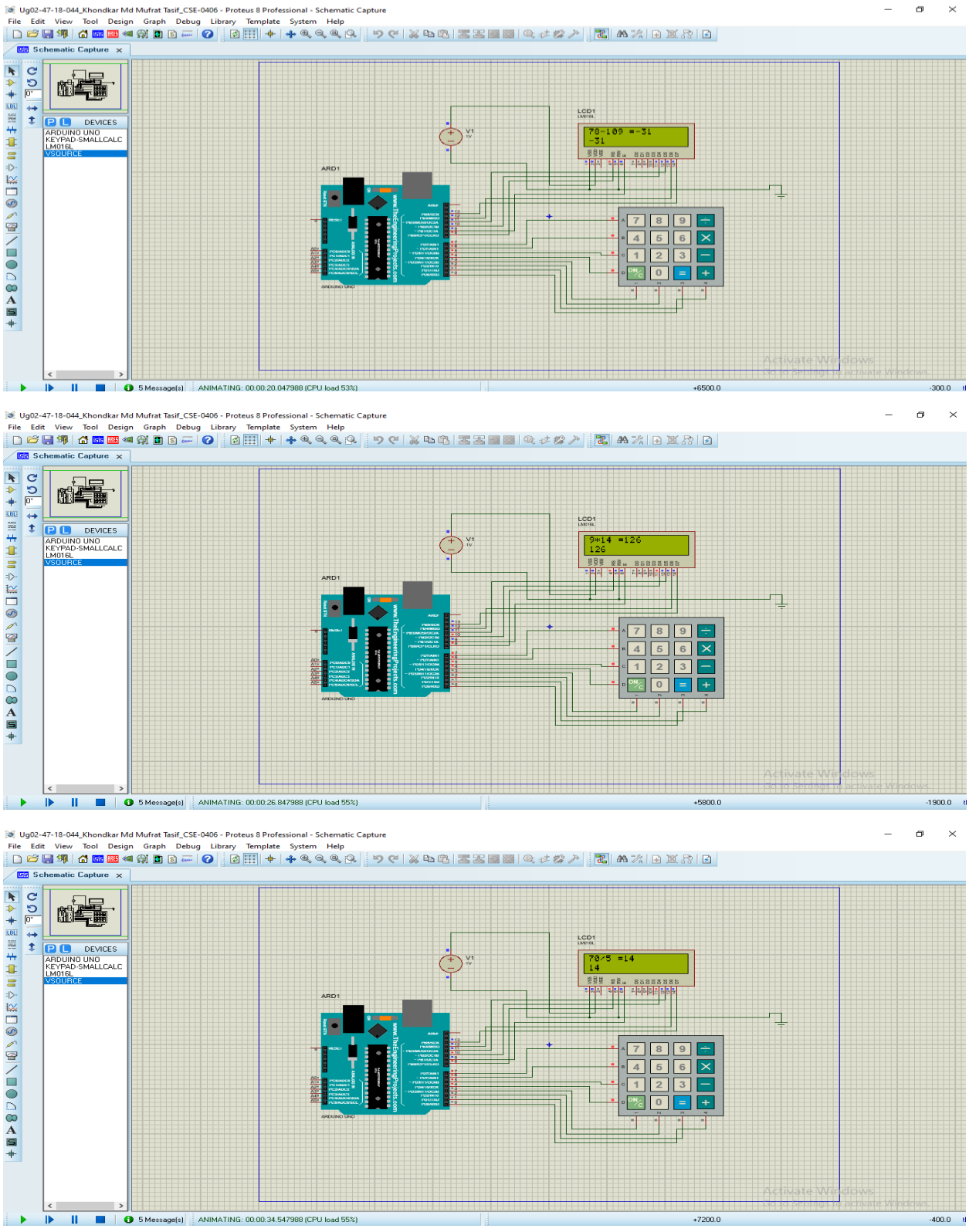

Fig no: 03/04/05 (Subtraction/Multiplication/Division)