

CALCULATOR



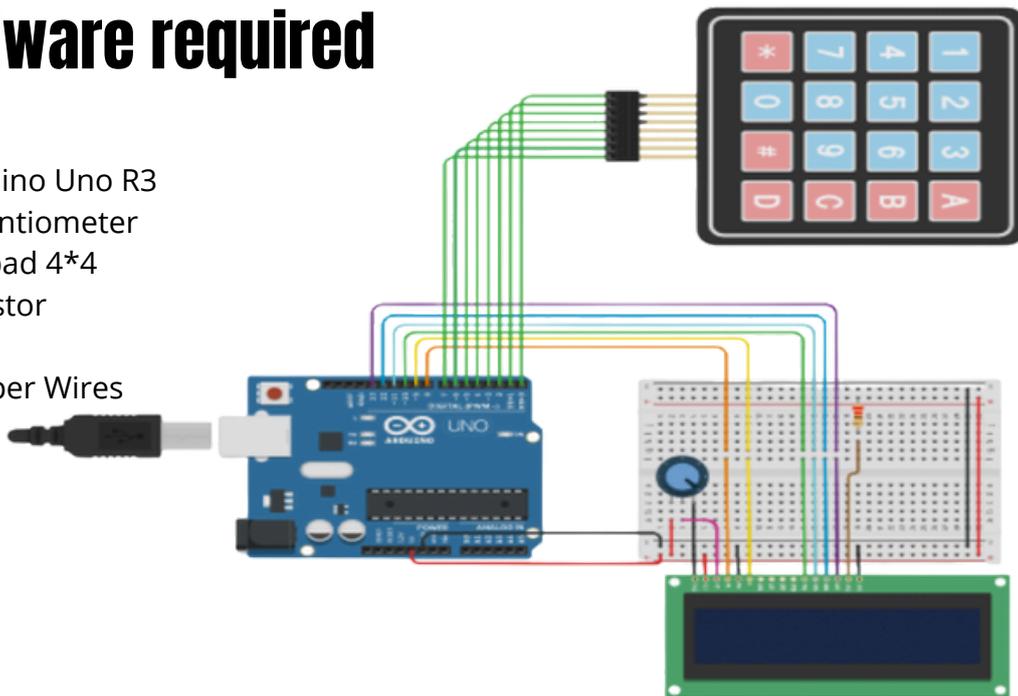
Calculator is a device used to solve mathematical problems easily and in a fast way this calculator can Add, Subtract, Multiply and Divide.

In this project we have used a (4*4) keypad to take input and a LCD to show output . A potentiometer is also used for adjusting the LCD so it can show the output. Keys used

A – Addition. C – Multiplication
B – Subtract. D - Divid

Hardware required

- Arduino Uno R3
- Potentiometer
- Keypad 4*4
- Resistor
- LCD
- Jumper Wires



Precautions

1. Connections should be done properly.
2. Arduino is case sensitive so code accordingly.
3. Give different colours to the wires.
4. Adjust potentiometer to get output on LCD.

Arduino Code

```
#include <LiquidCrystal.h>
#include <Keypad.h>

const byte ROWS=4;
const byte COLS=4;

char keys[ROWS][COLS]={{'1','2','3','A'},
{'4','5','6','B'},{'7','8','9','C'},{'*','0','#','D'}};
byte rowPins[ROWS]={0,1,2,3};
byte colPins[COLS]={4,5,6,7};

Keypad
kpd=Keypad(makeKeymap(keys),rowPins,colP
ins,ROWS,COLS);

const int
rs=8,en=9,d4=10,d5=11,d6=12,d7=13;
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("Calculator");
  lcd.setCursor(0,1);
  lcd.print("-Raghav");
  delay(2000);
  lcd.clear();
}

void loop(){
  key=kpd.getKey();
  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'){Serial.println("Button 1");Number=
(Number==0)?1:(Number*10)+1;}
if(key=='4'){Serial.println("Button 4");Number=
(Number==0)?4:(Number*10)+4;}
if(key=='7'){Serial.println("Button 7");Number=
(Number==0)?7:(Number*10)+7;}
if(key=='0'){Serial.println("Button 0");Number=
(Number==0)?0:(Number*10)+0;}
if(key=='2'){Serial.println("Button 2");Number=
(Number==0)?2:(Number*10)+2;}
if(key=='5'){Serial.println("Button 5");Number=
(Number==0)?5:(Number*10)+5;}
if(key=='8'){Serial.println("Button 8");Number=
(Number==0)?8:(Number*10)+8;}
if(key=='3'){Serial.println("Button 3");Number=
(Number==0)?3:(Number*10)+3;}
if(key=='6'){Serial.println("Button 6");Number=
(Number==0)?6:(Number*10)+6;}
if(key=='9'){Serial.println("Button 9");Number=
(Number==0)?9:(Number*10)+9;}

if(key=='#'){Serial.println("Button
Equal");Num2=Number;result=true;}

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("Division");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(Num
2);
  if(result==true){lcd.print("
=");lcd.print(Number);}
  lcd.setCursor(0,1);
  lcd.print(Number);
}
```