#include <LiquidCrystal.h>

#include <Keypad.h> //Header file for Keypad from https://github.com/Chris--A/Keypad

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, colPins, 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("DIY Calculator");

lcd.setCursor(0, 1);

lcd.print("-CircuitDigest");

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");

if (Number==0)

Number=1;

else

Number = (Number\*10) + 1;

}

if (key == '4')

{Serial.println ("Button 4");

if (Number==0)

Number=4;

else

Number = (Number\*10) + 4;

}

if (key == '7')

{Serial.println ("Button 7");

if (Number==0)

Number=7;

else

Number = (Number\*10) + 7;

}

if (key == '0')

{Serial.println ("Button 0");

if (Number==0)

Number=0;

else

Number = (Number\*10) + 0;

}

if (key == '2')

{Serial.println ("Button 2");

if (Number==0)

Number=2;

else

Number = (Number\*10) + 2;

}

if (key == '5')

{Serial.println ("Button 5");

if (Number==0)

Number=5;

else

Number = (Number\*10) + 5;

}

if (key == '8')

{Serial.println ("Button 8");

if (Number==0)

Number=8;

else

Number = (Number\*10) + 8;

}

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;

}

if (key == '6')

{Serial.println ("Button 6");

if (Number==0)

Number=6;

else

Number = (Number\*10) + 6;

}

if (key == '9')

{Serial.println ("Button 9");

if (Number==0)

Number=9;

else

Number = (Number\*10) + 9;

}

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);

}