#include "mbed.h"

// Define pins for 7-segment display

DigitalOut segA(D0);

DigitalOut segB(D1);

DigitalOut segC(D2);

DigitalOut segD(D3);

DigitalOut segE(D4);

DigitalOut segF(D5);

DigitalOut segG(D6);

// Define pins for keypad input

DigitalIn key1(A0);

DigitalIn key2(A1);

DigitalIn key3(A2);

DigitalIn key4(A3);

// Define variable to store first input from user

int input1;

// Define variable to store operation (A = add, B = subtract)

char operation;

// Define variable to store second input from user

int input2;

// Define function to display a single digit on the 7-segment display

void displayDigit(int digit) {

// Map the digit to the appropriate segment outputs

switch (digit) {

case 0:

segA = 1; segB = 1; segC = 1; segD = 1; segE = 1; segF = 1; segG = 0;

break;

case 1:

segA = 0; segB = 1; segC = 1; segD = 0; segE = 0; segF = 0; segG = 0;

break;

case 2:

segA = 1; segB = 1; segC = 0; segD = 1; segE = 1; segF = 0; segG = 1;

break;

case 3:

segA = 1; segB = 1; segC = 1; segD = 1; segE = 0; segF = 0; segG = 1;

break;

case 4:

segA = 0; segB = 1; segC = 1; segD = 0; segE = 0; segF = 1; segG = 1;

break;

case 5:

segA = 1; segB = 0; segC = 1; segD = 1; segE = 0; segF = 1; segG = 1;

break;

case 6:

segA = 1; segB = 0; segC = 1; segD = 1; segE = 1; segF = 1; segG = 1;

break;

case 7:

segA = 1; segB = 1; segC = 1; segD = 0; segE = 0; segF = 0; segG = 0;

break;

case 8:

segA = 1; segB = 1; segC = 1; segD = 1; segE = 1; segF = 1; segG = 1;

break;

case 9:

segA = 1; segB = 1; segC = 1; segD = 1; segE = 0; segF = 1; segG = 1;

break;

case 10:

segA = 0; segB = 0; segC = 0; segD = 0; segE = 0; segF = 0;

case 11:

segA = 0; segB = 0; segC = 0; segD = 0; segE = 0; segF = 0; segG = 1;

break;

case 12:

segA = 0; segB = 0; segC = 0; segD = 1; segE = 1; segF = 1; segG = 0;

break;

case 13:

segA = 1; segB = 0; segC = 0; segD = 1; segE = 1; segF = 1; segG = 1;

break;

case 14:

segA = 0; segB = 0; segC = 1; segD = 1; segE = 1; segF = 1; segG = 1;

break;

case 15:

segA = 0; segB = 0; segC = 1; segD = 1; segE = 1; segF = 0; segG = 1;

break;

}

}

int main() {

// Loop forever

while (1) {

// Wait for user to enter first input

while (!key1 && !key2 && !key3 && !key4) {}

if (key1) input1 = 1;

else if (key2) input1 = 2;

else if (key3) input1 = 3;

else if (key4) input1 = 4;

// Wait for user to enter operation

while (!key1 && !key2 && !key3 && !key4) {}

if (key1) operation = 'A';

else if (key2) operation = 'B';

// Wait for user to enter second input

while (!key1 && !key2 && !key3 && !key4) {}

if (key1) input2 = 1;

else if (key2) input2 = 2;

else if (key3) input2 = 3;

else if (key4) input2 = 4;

// Calculate result based on input and operation

int result;

if (operation == 'A') {

result = input1 + input2;

} else {

result = input1 - input2;

}

// Check if user has requested to display result

if (key4) {

// Display result on 7-segment display

if (result > 9) {

displayDigit(15); // Display 'F' if result > 9

} else if (result < 0) {

displayDigit(10); // Display 'A' if result < 0

} else {

displayDigit(result); // Display result if 0 <= result <= 9

}

}

}

}