Design Assignment 2 – Assembly Language Programming

Josh Tobia

Linh Ngo

Brian Dawson

ELC 411 - Embedded Systems

The College of New Jersey

Department of Electrical and Computer Engineering (ECE)

Date Submitted: 10/2/19

Group Members:

Josh Tobia - Worked on creating code and project

Linh Ngo - Worked on creating code and project

Brian Dawson - Worked on creating code and project

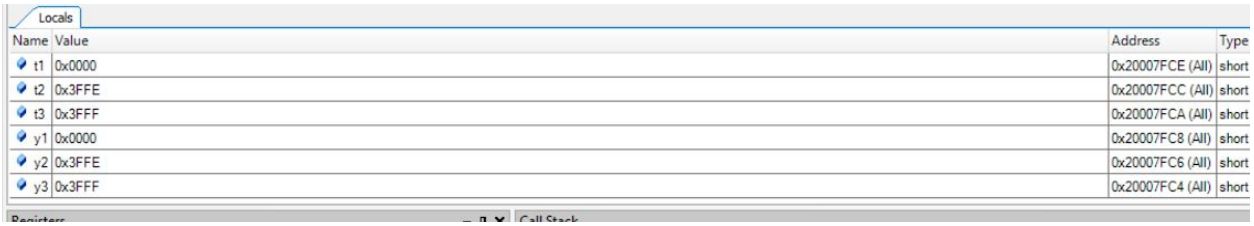

Figure 1: Variables in Watch Window

Code:

```
    .syntax unified
    .text
    .global inner_prod_asm
    .func inner_prod_asm, inner_prod_asm
    .thumb_func

Inner_prod_asm:
    // r0 = h; r1 = x; r2= n; r3 = sum; r4= i;
    push {r4, r5, r6, r7}
    mov r3, #0 // sum = 0
    mov r4, #0 // i = 0

    loop:
        cmp r4, r2 //comparing r4(i) and r2(n)
        bge continue //if i >= n go to continue
        ldrsh r5, [r0],#2  //Loading the value of h then post incrementing by 2 (2bytes)
        ldrsh r6, [r1],#2 //Loading the value of h then post incrementing by 2 (2bytes)
        mul r7, r5, r6 //temp = h[i]*x[i]
        add r3, r3, r7 //sum = sum + temp
        add r4, r4, #1 //i++
        b loop //branch back to loop

    continue :
        asr r0, r3, #16
        pop {r4,r5,r6,r7}
        bx lr

.endfunc
.end
```