LAB B 2021 Z

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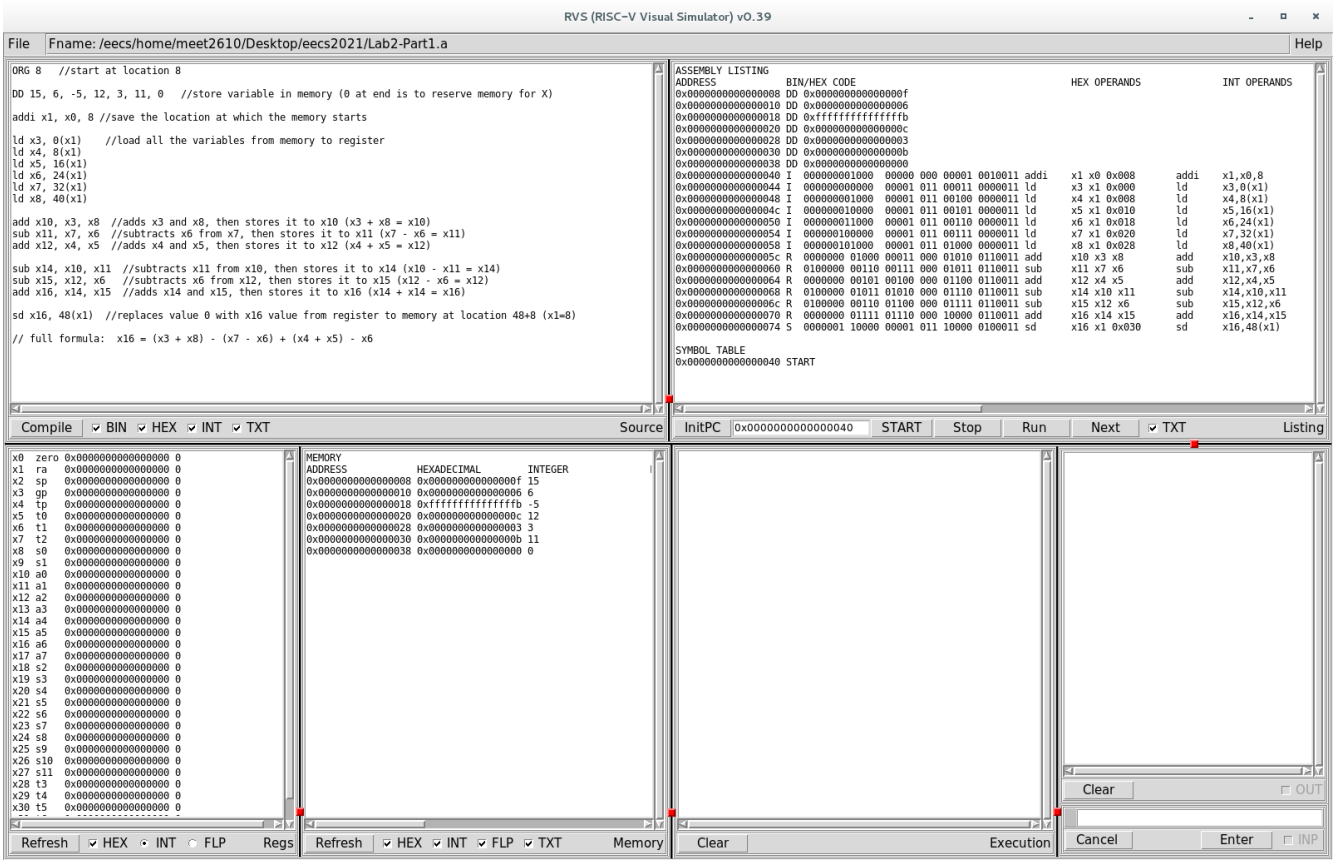
LAB_B Part 1

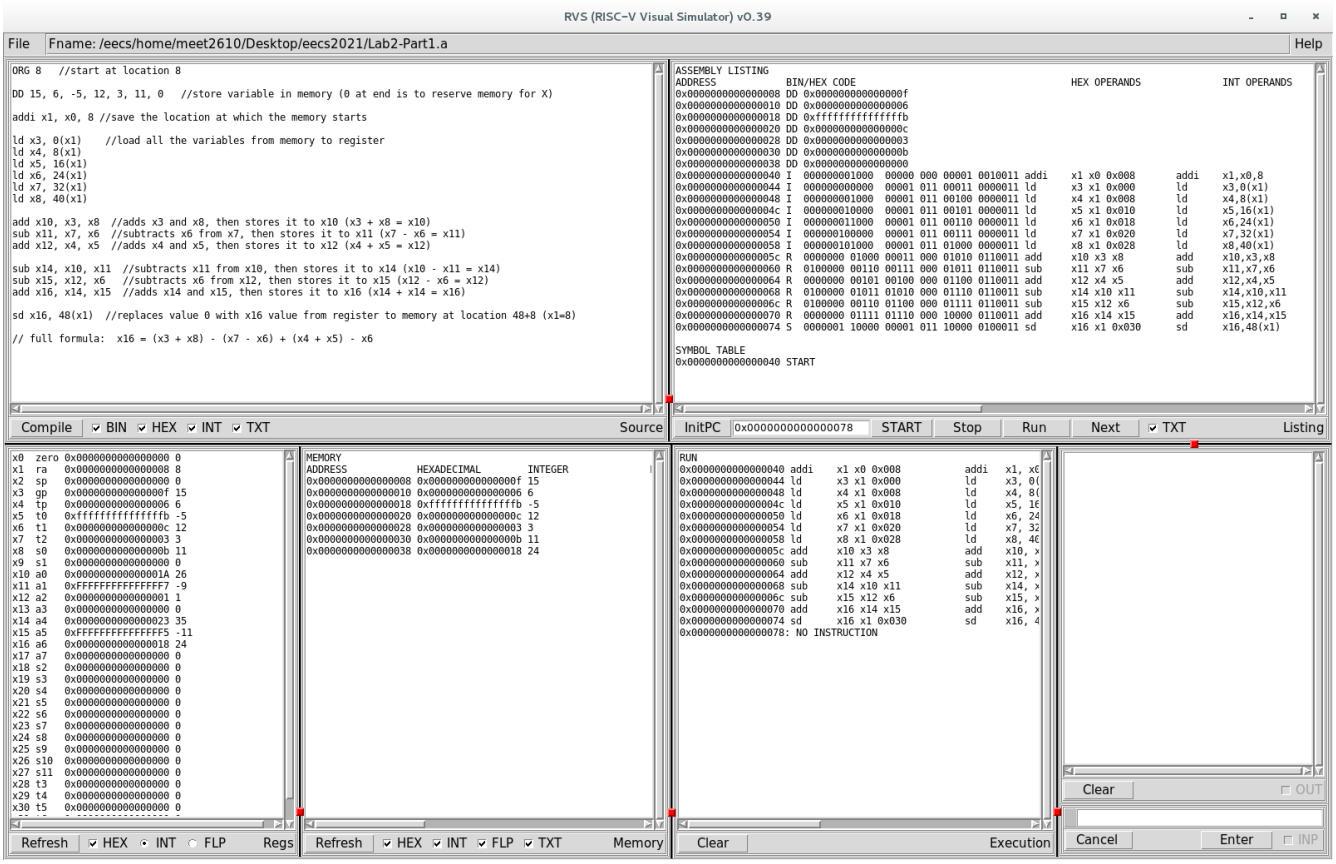
CODE:

```
ORG 8          //start at location 8

DD 15, 6, -5, 12, 3, 11, 0   //store variable in memory (0 at end is to reserve memory for X)

addi x1, x0, 8  //save the location at which the memory starts

ld x3, 0(x1)          //load all the variables from memory to register
ld x4, 8(x1)
ld x5, 16(x1)
ld x6, 24(x1)
ld x7, 32(x1)
ld x8, 40(x1)

add x10, x3, x8            //adds x3 and x8, then stores it to x10 (x3 + x8 = x10)
sub x11, x7, x6            //subtracts x6 from x7, then stores it to x11 (x7 - x6 = x11)
add x12, x4, x5            //adds x4 and x5, then stores it to x12 (x4 + x5 = x12)

sub x14, x10, x11          //subtracts x11 from x10, then stores it to x14 (x10 - x11 = x14)
sub x15, x12, x6           //subtracts x6 from x12, then stores it to x15 (x12 - x6 = x12)
add x16, x14, x15          //adds x14 and x15, then stores it to x16 (x14 + x14 = x16)

sd x16, 48(x1)         //replaces value 0 with x16 value from register to memory at location 48+8
(x1=8)

// full formula:       x16 = (x3 + x8) - (x7 - x6) + (x4 + x5) - x6
```

Program Screenshot 1 (after compile, before run):



Program Screenshot 2 (after run):

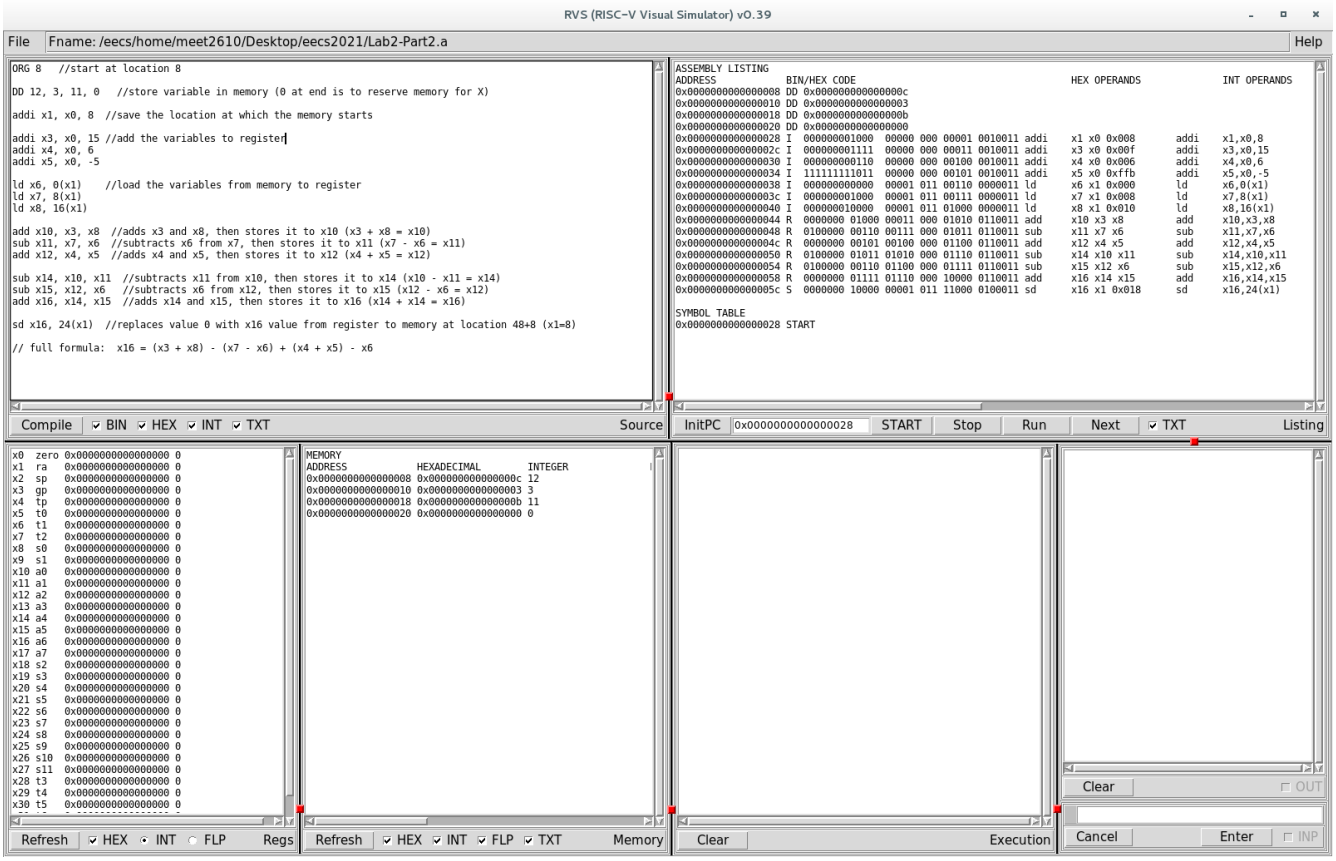


LAB_B Part 2

CODE:

```
ORG 8//start at location 8

DD 12, 3, 11, 0   //store variable in memory (0 at end is to reserve memory for X)

addi x1, x0, 8          //save the location at which the memory starts

addi x3, x0, 15         //add the variables to register
addi x4, x0, 6
addi x5, x0, -5

ld x6, 0(x1)            //load the variables from memory to register
ld x7, 8(x1)
ld x8, 16(x1)

add x10, x3, x8             //adds x3 and x8, then stores it to x10 (x3 + x8 = x10)
sub x11, x7, x6             //subtracts x6 from x7, then stores it to x11 (x7 - x6 = x11)
add x12, x4, x5             //adds x4 and x5, then stores it to x12 (x4 + x5 = x12)

sub x14, x10, x11           //subtracts x11 from x10, then stores it to x14 (x10 - x11 = x14)
sub x15, x12, x6            //subtracts x6 from x12, then stores it to x15 (x12 - x6 = x12)
add x16, x14, x15           //adds x14 and x15, then stores it to x16 (x14 + x14 = x16)

sd x16, 24(x1)          //replaces value 0 with x16 value from register to memory at location 48+8
(x1=8)

// full formula:        x16 = (x3 + x8) - (x7 - x6) + (x4 + x5) – x6
```

Program Screenshot 1 (after compile, before run)



Program Screenshot 2 (after run)