

**The Program:**

Machine Code	Basic Code	Original Code
0x00000033	add x0 x0 x0	add x0, x0, x0
0x0000c097	auipc x1 12	auipc x1, 12
0x00009463	bne x1 x0 8	bne x1, x0, L1
0x401080b3	sub x1 x1 x1	L2: sub x1, x1, x1
0xfe104ee3	blt x0 x1 -4	L1: blt x0, x1, L2
0xfce06113	ori x2 x0 -50	ori x2, x0, -50
0x000121b3	slt x3 x2 x0	slt x3, x2, x0
0x00013233	sltu x4 x2 x0	sltu x4, x2, x0
0x402002b3	sub x5 x0 x2	sub x5, x0, x2
0x40215313	srai x6 x2 2	srai x6, x2, 2
0x00215393	srli x7 x2 2	srli x7, x2, 2
0x00111413	slli x8 x2 1	slli x8, x2, 1

### Register File from Venus Simulator:

Registers <span>Memory</span>	
zero	0
ra (x1)	0
sp (x2)	-50
gp (x3)	1
tp (x4)	0
t0 (x5)	50
t1 (x6)	-13
t2 (x7)	1073741811
s0 (x8)	-100
s1 (x9)	0
a0 (x10)	0
a1 (x11)	0
a2 (x12)	0
a3 (x13)	0
a4 (x14)	0
a5 (x15)	0

Register File Testing Results:

Register	Value	Hex	Dec	Hex	Dec
[22][31:0]	0		0		
[21][31:0]	0		0		
[20][31:0]	0		0		
[19][31:0]	0		0		
[18][31:0]	0		0		
[17][31:0]	0		0		
[16][31:0]	0		0		
[15][31:0]	0		0		
[14][31:0]	0		0		
[13][31:0]	0		0		
[12][31:0]	0		0		
[11][31:0]	0		0		
[10][31:0]	0		0		
[9][31:0]	0		0		
[8][31:0]	0	0	X	-100	
[7][31:0]	0	0	X	1073741811	
[6][31:0]	0	0	X	-13	
[5][31:0]	0	0	X	50	
[4][31:0]	0	0	X	0	
[3][31:0]	0	0	X	1	
[2][31:0]	0	0	X	-50	
[1][31:0]	0	0	X	0	
[0][31:0]	0	0	X	0	

## Initialization Code:

initial begin

```
{mem[3],mem[2],mem[1],mem[0]}=32'b00000000_00000_00000_000_00000_0110011;  
{mem[7],mem[6],mem[5],mem[4]}=32'h0000c097;  
{mem[11],mem[10],mem[9],mem[8]}=32'h00009463;  
{mem[15],mem[14],mem[13],mem[12]}=32'h401080b3;  
{mem[19],mem[18],mem[17],mem[16]}=32'hfe104ee3;  
{mem[23],mem[22],mem[21],mem[20]}=32'hfce06113;  
{mem[27],mem[26],mem[25],mem[24]}=32'h000121b3;  
{mem[31],mem[30],mem[29],mem[28]}=32'h00f1f213;  
{mem[35],mem[34],mem[33],mem[32]}=32'h00013233;  
{mem[39],mem[38],mem[37],mem[36]}=32'h402002b3;  
{mem[43],mem[42],mem[41],mem[40]}=32'h40215313;  
{mem[47],mem[46],mem[45],mem[44]}=32'h00215393;  
{mem[51],mem[50],mem[49],mem[48]}=32'h00111413;  
end
```