

```

main()
{
int y[100],x[100],c,i;
c=10;
for(i=0; i<100; i++) {
    y[i] = x[i] + c;
}
}

.text
.align 2
.file 2 "test2.c"
.globl main
.loc 2 2
# 1 main()
# 2 {
.ent main 2
main:
.option 01
.set noreorder
.cpload $25
.set reorder
subu $sp, 808
.frame $sp, 808, $31
.loc 2 2
.loc 2 5
# 3 int y[100], x[100], c, i;
# 4
# 5 c=10;
li $14, 10
sw $14, 4($sp)
.loc 2 7
# 6
# 7 for(i=0; i<100; i++) {
sw $0, 0($sp)
$32:
.loc 2 7
.loc 2 8
# 8 y[i] = x[i] + c;
lw $15, 0($sp)
mul $24, $15, 4
addu $25, $sp, 8
addu $8, $24, $25
lw $9, 0($8)
lw $10, 4($sp)
addu $11, $9, $10
addu $12, $sp, 408
addu $13, $24, $12
sw $11, 0($13)
.loc 2 7
# 7 for(i=0; i<100; i++) {
lw $14, 0($sp)
addu $15, $14, 1
sw $15, 0($sp)
blt $15, 100, $32
.loc 2 11
# 8 y[i] = x[i] + c;
# 9 }
# 10
# 11 }
move $2, $0
.livereg 0x2000FF0E, 0x00000FFF
addu $sp, 808
j $31
.end main

```

**Not Optimized**

*get i*  
*x[i] \* 4*  
*x[i]*  
*x[i] + c*  
*Y[4\*i]*  
*Y[i] = x[i] + c*  
*i = i + 1*  
*restore stack*  
*return*

```

.verstamp 7 20
.option pic2
.text
.align 2
.file 2 "test2.c"
.globl main
.loc 2 2
# 1 main()
# 2 {
.ent main 2
main:
.option 02
subu $sp, 816
.frame $sp, 816, $31
.loc 2 2
.loc 2 5
# 3 int y[100],x[100],c,i;
# 4
# 5 c=10;
.loc 2 7
# 6
# 7 for(i=0; i<100; i++) {
move $2, $0
addu $3, $sp, 416
addu $4, $sp, 16
addu $2, $sp, 416
$32:
.loc 2 7
.loc 2 8
# 8 y[i] = x[i] + c;
.noalias $3,$gp
.noalias $4,$3
.noalias $4,$gp
lw $14, 0($4)
addu $15, $14, 10
sw $15, 0($3)
.loc 2 7
# 7 for(i=0; i<100; i++) {
lw $24, 4($4)
addu $25, $24, 10
sw $25, 4($3)
lw $8, 8($4)
addu $9, $8, 10
sw $9, 8($3)
lw $10, 12($4)
addu $11, $10, 10
sw $11, 12($3)
addu $3, $3, 16
addu $4, $4, 16
bne $4, $2, $32
.alias $3,$4
.alias $3,$gp
.alias $4,$gp
.loc 2 11
# 8 y[i] = x[i] + c;
# 9 }
# 10
# 11 }
move $2, $0
.livereg 0x2000FF0E, 0x00000FFF
addu $sp, 816
j $31
.end main

```

**Optimized**

*\$2 = i*  
*\$3 = Y*  
*\$4 = X*  
*Y[0]*

*stopping point*

*x[0]*  
*x[0] + c*  
*Y[0] = x[0] + c*