

Compiling Loop Statements

for loop example

C Code

```
sum = 0;
for ( n = 1; n <= 4; n++)
{
    sum = sum + n;
}
```

MIPS Code

```
add $t0, $zero, $zero      # initialize running sum, $t0 = 0
addi $a1, $zero, 1         # Initialize counter to 1
addi $a2, $zero, 4         # initialize $a2 with max counter value (4)

loop:    beq $a1, $a2, finish # finished when $a1 is 4
         add $t0, $t0, $a1    # compute running sum of $a0
         addi $a1, $a1, 1     # increment running count by 1
         j loop

finish:  add $t0, $t0, $a1    # compute the cumulative sum
         add $v0, $t0, $zero  # return the cumulative sum
```