# Functional Description:
# A program to find the sum of the integers from 1 to N, where N is a value
# read in from the keyboard.

# Pseudocode description of algorithm:
# main: print "
Please input a value for N = "
# read v0
# If (v0 > 0)
# { 
#     t0 = 0;
#     while (v0 > 0) do
#     {
#         t0 = t0 + v0;
#         v0 = v0 - 1
#     }
#     print " The sum of the integers from 1 to N is ", t0;
# go to main
# } 
# else
# print "
**** Adios Amigo - Have a good day ****"

.data
Prompt:.asciiz "Please Input a value for N = 
Result:.asciiz "The sum of the integers from 1 to N is"
Bye: .asciiz " **** Adios Amigo - Have a good day****"
.globl main
.text
main:
li $v0, 4 # system call code for Print String
la $a0, Prompt # load address of prompt into $a0
syscall # print the prompt message
li $v0, 5 # system call code for Read Integer
syscall # reads the value of N into $v0
blez $v0, End #branch to end if $v0 <= 0
li $t0, 0 # clear register $t0 to 0

Loop:
add $t0, $t0, $v0 # sum of integers in register $t0
addi $v0, $v0, -1 # summing integers in reverse order
bnez $v0, Loop # branch to loop if $v0 is != 0
li $v0, 4 # system call code for Print String
la $a0, Result # load address of message into $a0
syscall # print the string
li $v0, 1 # system call code for Print Integer
move $a0, $t0  # move value to be printed to $a0
syscall       # print sum of integers
b main       # branch to main

End:   li $v0, 4      # system call code for Print String
la $a0, Bye  # load address of msg. into $a0
syscall      # print the string
li $v0, 10   # terminate program run and
syscall      # return control to system