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.data
prompt:    .ascii "Enter an integer: "
illegal_msg: .ascii "Illegal Number!\n"
fib_msg:   .ascii "First Fibonacci numbers:\n"
space:     .ascii " "

.text
.globl main

main:
# Ask user for an integer
    li $v0, 4          # print input prompt
    la $a0, prompt
    syscall
    li $v0, 5          # read integer value
    syscall
    move $t0, $v0       # save N in $t0

# Check if N is at least 22
    blez $t0, illegal   # if N <= 0 → invalid
    blt $t0, 22, illegal # if N < 22 → invalid
    j start_fib         # valid input → go compute Fibonacci

illegal:
    li $v0, 4          # service: print string

# Show error message and restart input
    la $a0, illegal_msg
    syscall
    j main              # restart from the beginning

start_fib:
    li $v0, 4          # service: print string

# Print title for Fibonacci sequence and set initial values
    la $a0, fib_msg
    syscall
    li $t1, 0           # first term (F0)
    li $t2, 1           # second term (F1)
    li $t3, 0           # counter for how many terms printed

fib_loop:
# Continue while we still have terms left to display
    bge $t3, $t0, end   # if printed N terms → finish

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move $a0, $t1      # current Fibonacci term to print
li $v0, 1
syscall
li $v0, 4          # print a separating space

# Print separator and update Fibonacci terms
la $a0, space
syscall
addu $t4, $t1, $t2 # next = previous + current
move $t1, $t2      # shift current to previous
move $t2, $t4      # next becomes current

# Increase counter and loop back
addi $t3, $t3, 1   # counter++
j fib_loop         # loop again

end:
li $v0, 10         # syscall to exit
syscall
```