```
# CS 2734
# Answer to quiz 3
# Print the numbers from 10 to 1 on separate lines
# Register mapping:
#   $t0    loop index = 10, initially
#
main:                           # main function
        addu    $s7, $0, $ra    # save return address in global register

## Start of quiz 3 answer ##################################################
        addi    $t0, $zero, 10  # $t0 = 10

loop:   li      $v0, 1
        add     $a0, $0, $t0
        syscall

        li      $v0, 4          # print_str (system call 4)
        la      $a0, Newl       # takes the address of string as an argument
        syscall

        addi    $t0, $t0, -1    # $t0 = $t0 - 1
        bne     $t0, $0, loop   # if ($t0 != t1) goto loop

## End of quiz 3 answer ####################################################

        addu    $ra, $0, $s7    # restore the return address
        jr      $ra             # return to the main program

        .data
Newl:   .asciiz "\n"            # string to print

### output
# ten60% spim -file quiz3_ans.s
# SPIM Version 6.0 of July 21, 1997
# Copyright 1990-1997 by James R. Larus (larus@cs.wisc.edu).
# All Rights Reserved.
# See the file README for a full copyright notice.
# Loaded: /usr/local/lib/trap.handler
# 10
# 9
# 8
# 7
# 6
# 5
# 4
# 3
# 2
# 1
###############
```

```
# CS 2734
# Answer to quiz 3 using an array (not what you were supposed to do)
# Print the numbers from 10 to 1 on separate lines
# Register mapping:
#   $s0    address in the array A
#   $t0    value from A
#
main:                           # main function
        addu    $s7, $0, $ra    # save return address in global register

## Start of quiz 3 answer using array ######################################
        la      $s0, A          # address of A in $s0

Loop:   lw      $t0, 0($s0)     # next word of A
        beq     $t0, $0, Exit   # terminate when get to 0 in A

        li      $v0, 1          # print an int
        add     $a0, $t0, $0
        syscall

        li      $v0, 4          # print_str (system call 4)
        la      $a0, Newl       # takes the address of string as an argument
        syscall

        addi    $s0, $s0, 4     # on to next address in A
        j       Loop            # back around loop
Exit:
## End of quiz 3 answer using array ########################################

        addu    $ra, $0, $s7    # restore the return address
        jr      $ra             # return to the main program

        .data
A:      .word  10, 9, 8, 7, 6, 5, 4, 3, 2, 1, 0
Newl:   .asciiz "\n"            # string to print

### output
# ten60% spim -file quiz3_ans2.s
# SPIM Version 6.0 of July 21, 1997
# Copyright 1990-1997 by James R. Larus (larus@cs.wisc.edu).
# All Rights Reserved.
# See the file README for a full copyright notice.
# Loaded: /usr/local/lib/trap.handler
# 10
# 9
# 8
# 7
# 6
# 5
# 4
# 3
# 2
# 1
###############
```