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                Lecture 15 Demo Program 1, Reversing a Character String
#               Lecture 15 Demo Program 1, Reversing a Character String for Display
#
#       SPIM program to reverse and decode a received data string and display it
#       to the console.  The program reverses a 96-character block of text, removes
#       specific contrl characters, and displays the result.
#
#       Register assignments:   $t0 -- Pointer to base address of "buffer" (received
block)
#                               $t1 -- Pointer to base address of reversed data
block
#                               $t2 -- Counter; counts number of times through the
loop
#                               $t3 -- Contains current character being analyzed

        .data
buffer: .ascii "2.12<< :tsaceroF** ,0.32<< :tnerruC** MR**&& ;0.25>> :tsaceroF**
,6.94>> :tnerruC** GK**########"
display: .space 80

        .text
main:   la $t0,buffer       # Load last character address of data block to be
reversed
        add $t0,$t0,95      # (First character address plus 95, as 96 characters
always transmitted)
        la $t1,display      # Load base address of data space for reversed block
        move $t2,$0         # Initialize counter to 0

loop:   lb $t3,0($t0)       # Loop begins here; load the next byte
        beq $t3,35,next     # Test and eliminate characters #, &, *, <, and >
        beq $t3,38,next
        beq $t3,42,next
        beq $t3,60,next
        beq $t3,62,next
        sb $t3,0($t1)       # Store valid character in display block
        addi $t2,$t2,1      # Increment counter
        beq $t2,96,print    # Analysis done yet? If not, increment pointers and
continue
        sub $t0,$t0,1       # Set block pointer to next character address
        addi $t1,$t1,1      # Set display space pointer to next character address
        j loop              # Return to loop for next character


next:   sub $t0,$t0,1       # Set block pointer to next character address
        j loop              # Return to loop for next character
                            # (Do not store a character here, so do not increment
$t1)

print:  la $a0,display      # Print reversed block
        li $v0,4
        syscall

        li $v0,10
        syscall             # Program over
#
#       End of file Lecture 15 Demo Program 1


#  KG Current: 49.6, Forecast: 52.0; RM Current: 23.0, Forecast: 21.2

#  2.12<< :tsaceroF** ,0.32<< :tnerruC** MR**&& ;0.25>> :tsaceroF** ,6.94>>
:tnerruC** GK**#

#  89 characters
```