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substrend.s

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/**
 * substrend.s
 * PARAMETERS: X0 (STRING)
 *              X1 (RANGE BEGIN)
 * OUTPUT      : X0 (POINTER TO SUBSTRING)
 * This routine goes from the begin index in X1 to the end of a given string in
X0,
 * and returns the resulting substring in X0.
 * ALL REGISTERS PRESERVED EXCEPT X0
 */

    .text
    .global substrend
substrend:
    // storing X0-X19 registers, as malloc will not preserve most of these
    str X1, [sp, -16]!
    stp X2, X3, [sp, -16]!
    stp X4, X5, [sp, -16]!
    stp X6, X7, [sp, -16]!
    stp X8, X9, [sp, -16]!
    stp X10, X11, [sp, -16]!
    stp X12, X13, [sp, -16]!
    stp X14, X15, [sp, -16]!
    stp X16, X17, [sp, -16]!
    stp X18, X19, [sp, -16]!
    stp X20, X21, [sp, -16]!
    str lr, [sp, -16]!
    mov x20, x1      // copying begin in x20
    mov x19, x0      // copying string in x19
    mov x1, #10000    // our string maximum for length routine
    bl length        // need length of string for malloc
    add x0, x0, #1    // accounting for null terminator
    sub x0, x0, x20

substrPreLoop:
    bl malloc        // calling malloc with requests bytes
    mov x21, #0
substrLoop:
    ldrb w17, [x19, x20] // loading byte of given string into w17
    strb w17, [x0, x21]  // storing w17 into new string
    add x21, x21, #1      // incrementing
    add x20, x20, #1      // incrementing
    cmp w17, #0
    b.ne substrLoop      // if increment ≥ end, goto end label
substrEnd:
    // popping registers back from stack
    ldr lr, [sp], 16
    ldp X20, X21, [sp], 16
    ldp X18, X19, [sp], 16
    ldp X16, X17, [sp], 16
    ldp X14, X15, [sp], 16
    ldp X12, X13, [sp], 16
    ldp X10, X11, [sp], 16
    ldp X8, X9, [sp], 16
    ldp X6, X7, [sp], 16
    ldp X4, X5, [sp], 16
    ldp X2, X3, [sp], 16
    ldr X1, [sp], 16
    ret lr

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