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main.s

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.data
    str1: .asciz "Hello,"
    str2: .asciz "world!"
    out: .asciz "Concatenated string - "
    nl: .asciz "\n"

.text
.global main
main:
    // Concatenate str1 and str2
    ldr x0, =str1
    mov x1, #0xffffffffffffffff // Maximum number of characters to count
    bl  length
    ldr x2, =str2
    mov x3, #0xffffffffffffffff // Maximum number of characters to count
    bl  length
    bl  concat

    // Check for allocation failure
    cbz x0, exit_failure

    // Save the pointer to the concatenated string
    mov x19, x0

    // Print output text
    ldr x0, =out
    bl  putstring

    // Print concatenated string
    mov x0, x19
    bl  putstring

    // Print newline
    ldr x0, =nl
    bl  putstring

    // Free the memory allocated by concat
    mov x0, x19
    mov x8, #215 // Service command code 215 for munmap
    mov x1, #0 // PROT_READ | PROT_WRITE
    mov x2, #34 // MAP_ANONYMOUS | MAP_PRIVATE
    mov x3, #-1 // fd = -1
    mov x4, #0 // offset = 0
    svc 0

exit_failure:
    // Setup the parameters to exit the program and then call Linux to do it.
    mov x0, #0 // Sets return code to 0
    mov x8, #93 // Service command code 93 terminates
    svc 0 // Call linux to terminate the program

```