

## Lab 2

Submit your work to moodle before the deadline

Implement a ‘**replace**’ program in MIPS assembly language that, given an array of integers *Arr*, its *length*, integers *x* and *y*, replaces all *x* with *y* in *Arr*. Then your program should print out all values of *Arr*.

For example, if *Arr* = {21, 20, 51, 83, 20, 20}, *length* = 6, *x* = 20, *y* = 5 and *index* = 0, then after running your program the values of *Arr* MUST be *Arr* = {21, 5, 51, 83, 5, 5} and the values MUST be printed out.

In the program, we assume the variables (e.g, *Arr*, *length*, *x*, *y* and *index*) should be declared and initialized manually in the **.data** section.

Output: 21 5 51 83 5 5 (The first (i.e., before 21) or last (i.e., after the last 5) space can be negligible.)

**NOTES:** How to print Integers and Strings/space/newline using ‘syscall’

```
.data
x:      .word    5
msg1:   .asciiz  "x="
nl:     .asciiz  "\n"
space:  .asciiz  " "

.text
main:
    # Register assignments
    # $s0 = x

    # Initialize registers
    lw      $s0, x          # Reg $s0 = x

    # Print msg1
    li      $v0, 4          # print_string syscall code = 4
    la      $a0, msg1
    syscall

    # Print result (x)
    li      $v0, 1          # print_int syscall code = 1
    move    $a0, $s0        # Load integer to print in $a0
    syscall

    # Print newline
    li      $v0, 4          # print_string syscall code = 4
    la      $a0, nl
    syscall

    # Exit
    li      $v0, 10         # exit
    syscall
```