CS231 Computer Systems and Organization
Department of Computer Science
School of Science and Technology

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
```