In-Class Exercise 2

Submit your work to moodle before the deadline

1. Implement a procedure **replace** 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, then after running your program the values of ***Arr*** should be ***Arr*** = {21, 5, 51, 83, 5, 5} and the values should be printed out. Your procedure must follow the MIPS procedure call conventions.

   The signature of this procedure in Java would look like this:

   void replace(int Arr[], int length, int x, int y);

NOTES: How to print Integers and Strings using 'syscall'

```
        .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

# ---------------------------------------------------------------
        # Start .data segment
        .data
x:      .word    5
msg1:   .asciiz  "x="
nl:     .asciiz  "\n"
```