

Lab 2: C/ F and Km/Miles Conversions

The purpose of this lab is for you to get familiar with MIPS assembly language. In this lab, you are going to write your first program in assembly.

Please write a program that converts temperature from C to F and from F to C. In your program please use only integer instructions (mul, div, add,...). To convert from Celsius to Fahrenheit, you can use the equation given below.

$$F = \frac{9}{5}C + 32$$

A program that could help you to get inputs/outputs from/to the console is in the following page (as well as at: <http://www.eecs.wsu.edu/~jdelgado/EE334>). It is necessary to have system calls in order to use the console. If you are interested on learning more about system calls please see pages A-48 and A-49 of the textbook.

After getting the temperature conversion program you are to modify this program to have conversion from Km to Miles and vice versa.

REPORT

Please include the following items in your report.

1. Explain how your program works. You may use a flow chart, pseudo C program, or other way to explain the program.
2. Show a couple of examples.
3. Conclusion section. Explain what you learned here and what was difficult about this lab.
4. A print out of your program. # ***Include comments in your program.***

SHOW AND TELL

Please give a demonstration of your program to your TA. Please make sure that she marks her list that you have done the lab.

REPORT IS DUE: Friday, February 6 (in class).

You can always give the report to your TA before the deadline.

Program “Shell”

```
.text
.globl __start
__start:
    la $a0,conv    # print conversion on terminal
    li $v0,4
    syscall

    li $v0,5        # syscall 5 reads an integer
    syscall

    ### if v0=0
    ### then C_to_F
    ### else F_to_C

    la $a0,prompt   # print prompt on terminal
    li $v0,4
    syscall

    li $v0,5        # syscall 5 reads an integer
    syscall

    ## conversion is done here
    ## C = 9/5 (F-32)
    ## make sure your result is put in register $t0

    la $a0,ans1     # print string before result
    li $v0,4
    syscall

    move $a0,$t0     # print result (that is in register $t0)
    li $v0,1
    syscall

    la $a0,end1     # system call to print
    li $v0,4        # print a new line
    syscall

    li $v0,10
    syscall          # exit

#####
#           data segment           #
#####

.data
conv:    .asciiz "C-->F (0)  or  F-->C (1): "
prompt:  .asciiz "Enter temperature in Celsius: "
ans1:    .asciiz "Temperature in Fahrenheit is: "
promptf: .asciiz "Enter temperature in Fahrenheit: "
ans2:    .asciiz "Temperature in Celsius is: "
endl:    .asciiz "\n"
```