WASHINGTON STATE UNIVERSITY

CptS260: Introduction to Computer Architecture

Spring 2023

Homework 5

Due: Friday 3/10/2023 @ Midnight
School of Electrical and Computer Engineering

What and how to submit: *Please submit your zipped folder to canvas by the due date. Your submission package should include your program code for the problem, as well as a report (in pdf or doc format) addressing questions in each problem.*

Coding Problem 1 [50 points]:
In this program, you are asked to write a program in assembly which works as a simple calculator. The program will get two integer numbers, and based on the requested operation, the result should be shown to the user.

a. The program should print a meaningful phrase for each input, and the result.
   i. "Enter the first number"
   ii. "Enter the second number"
   iii. "Enter the operation type"
   iv. "The result is"

b. The user should enter 0, 1, and 2 to tell the program the types of operation add, sub, and multiply, respectively. There should also be a fourth option 3, that allows the user to exit the program. Until the user presses option 3, the program should accept new numbers.

c. Once you implement the program, submit source code as well as a screenshot showing it's operation.

Coding Problem 2 [50 points]:

In this program, you should define an array of 10 elements in your data segment with these values:

$$A = \{11, 12, -10, 13, 9, 12, 14, 15, -20, 0\}$$

a. Write a functions that find the maximum and minimum value of this array.

b. Write another function which calculates the summation of the elements.

c. Call these functions in your main program, and print the outputs of these functions to the user
   i. "The maximum is 15"
   ii. "The minimum is -20"
   iii. "The summation is 56"

d. Please submit source code and screenshot showing operation.

NOTE: You can find system calls codes in QtSIMP Help or you can find at this address: http://www.tfinley.net/notes/cps104/mips.html

Another useful guide: http://www.egr.unlv.edu/~ed/MIPStextSMv11.pdf