CS301 Homework - Due Wed., Oct. 1 at class time

PART 1: Do exercises 2.10, 2.13.

For 2.10, note that peak performance is an artifically constructed metric. You get to pick exactly what instructions the computer will execute to make its performance look best.

PART 2: You are to write each of the following programs in assembly language for the STACK 10 computer. Note that any problem that says you should initialize variables means that you should use the WORD directive. If the variable doesn’t have to be initialized, use the ALLOC directive.

1. a) Write a program that computes the equivalent of the assignment expression

   \[ A = 2B - AC; \]

   where you should initialize A, B, C to 8, -3, -12, respectively.

   b) Show the load module form for the program you wrote.

2. Write a program with two initialized memory locations called X and Y and have the program swap the values in the two locations.

3. Write a program that will examine three initialized memory locations X, Y, and Z and put a copy of the smallest value in a position labelled A.

4. Assume that the location X holds a positive integer. Have the program calculate the sum of the integers from 1 to the value in X and place the answer in Y. Use a loop. If X holds 5, then Y will get 1+2+3+4+5 or 15.

Rules

You should do these on your own. You can ask general questions of others.

BE NEAT, particularly when you write out the load module.

Because you are not making any function calls in this assignment, you can use any part of memory. However, to make grading easier I request that you put data in low memory followed by your instructions. Low memory starts at location 0.

Please refer to the documentation for the STACK 10 computer’s machine and assembly language. This is on-line on my class web page.