

Introduction to Computer Systems, Assignment 5a

Due: Thursday, February 19, 2009, at the beginning of class

Name:
Course:
Assignment:
Due Date:

Chapter 4 Exercises:

Exercises 4.1: 1aceg,2aceg,3ace,4ace,5-7

Exercises 4.2: 1adehilmp, 2bdfhjln

Programming Assignment:


Programming Exercise 4.2.3. Turn in your .asm file and your output, appropriately labeled and stapled.

Debugging Assignment:

The program called **debug.asm** on the CSI 2334 Blackboard site is designed to input two numbers, compute their sum, and then display the numbers and the sum on the standard output device (monitor). It has been modified for efficiency and utilizes the same memory locations (number1 and number2) for both input and output.

1. **Examine the DATA segment and indicate below the exact output that you would expect this program to produce.** [Assume that the values entered by the user for number1 and number2 are 10 and -4].

2. Assemble and link the program using the debug switches to produce an executable file called **debug.exe** that can be debugged. Then open the executable file in the Windbg debugger. Select **Registers** from the View Menu to view the contents of the x86 registers. Next pull down the View Menu a second time and select **Memory** to view memory starting at the address of prompt1 (**&prompt1**). You should see windows that look similar to those shown on page 3 of this handout. Notice the current values in the registers and the values that have been stored in memory by the program.

3. Press the **Step-into** button  once to execute the first instruction in the program (the output macro). Enter the first value (you may have to move the output window out from behind the debug window first). The contents of any registers that have been changed by this instruction will be displayed in red. Note also any changes that have occurred in memory. Continue to step through the next three instructions, noting any changes to the registers and to memory. **Stop BEFORE executing the instruction:**

output prompt2

(it will be highlighted) and turn to page 4 of this handout. Modify the values of the registers on page 4 so that they are identical to those shown on your monitor. Also modify any memory locations on page 4 that are different from the ones displayed. Are these changes consistent with what you expected to see?

4. Repeat the last step for the instructions that are highlighted on pages 5-8. Before executing each of these instructions (when the indicated instruction is highlighted), modify the contents of the registers and memory on the attached pages to match the values displayed on your monitor.
5. Press the Step-into button one last time to finish execution of the program. Note the output that is displayed. Print a copy of it to turn in. Is it different from the output you indicated above? If so, explain why.

Turn in this handout, modified by making the changes described above, and the output from the debug.asm program with all pages stapled and appropriately labeled.

