

CS221: Assembly Language

Lab-06

Adapted from Prof. Mohamed Ben Othman Lab-06

Practice:

Procedures and the Stack:

You already got a previous lab using procedures. In this lab, you are asked to use procedures using the stack for parameter passing. There are two ways of passing parameters (besides by value or reference) either using registers or using a memory space (like the stack).

Try to copy the examples in the slides and execute them step by step checking in each the stack and the registers contents.

Exercise:

You will write a program that has four procedures besides the main procedure. This latter (main) is looping forever asking the user for the next command. This program should do the following:

- 1: Read an array of integers (dword) and put the size in ecx (ecx should contain the array size always in the main procedure. for this, use the stack).
- 2: Find the even numbers in the array and store them in even_array.
- 3: Find the odd numbers in the array and store them in odd_array.
- 4: Calculate and print the total of the even numbers (the total should be returned in eax).
- 5: Calculate and print the total of the odd numbers (the total should be returned in eax).
- 6: Calculate and print the total of all values (the total should be returned in eax).
- 7: Exit the forever loop.

You need to create the following procedures:

- 1: read_array: where you should use loop instruction to read the array values.
- 2: fill_even_odd: fill an array with the even numbers and fill the other with the odd numbers.
- 3: print_values: print the values specified by the base address and the ecx.
- 4: calculate_total: where you should use the loop instruction to get the total of an array specified by base address with scaling and ecx.

Note: use base addressing mode in (1, 2), and base-index with scale mode in (3, 4).

The menu should be:

- 1- Enter values
 - 2- Print even numbers
 - 3- Print odd numbers
 - 4- Print totals
 - 5- Exit
- Your choice:

Note: You should practice and do the exercise at home and, in the Lab time: the instructor will check your homework, take notes, and answer your questions if you have any.

Quiz:

We will have the second quiz this week in shaa Allah.