

CS 315 Test 2PC Fall 2015
Section 603, Tuesday, November 24, 2015
(45 points)

Name: _____

1. (15 Points) Write the assembly subprogram “average_even”. This subprogram receives as arguments (IN) the base address of array of non-negative integers and array size, and returns (OUT) double precision average of even numbers in the given array. To calculate the return value, this subprogram should divide the sum of even values by total number of even values. If the array size is zero, then subprogram should print error message and return -999.9. All the arguments should be passed on the stack. The returned average should be in double precision floating point value.

Arguments IN and OUT of subprogram

- \$sp+0 Holds array base address of integers (IN)
- \$sp+4 Holds array size (IN)
- \$sp+8 Holds average of even numbers in array in a double precision value(OUT)

2. (20 Points) Write the assembly subprogram “FindSmallestLargestNumber”. This subprogram receives as arguments (IN) the base address of array of non-negative double precision numbers and array size, and returns (OUT) the smallest number and largest number in the array. This subprogram should loop through array and find the minimum and maximum values in an array of double precision floating point numbers. If the array size is zero, then subprogram should print error message and return -999.9 for both minimum and maximum. All the arguments should be passed on the stack

Arguments IN and OUT of subprogram

\$sp+0 Holds array base address of doubles (IN)

\$sp+4 Holds array size (IN)

\$sp+8 Holds the value of smallest number in the array / minimum value (OUT)

\$sp+16 Holds the value of largest number in the array / maximum value (OUT)

3. (10 Points) Write the code for “main” that is needed to pass the required arguments into the subprogram “FindSmallestLargestNumber”, calling the subprogram and storing the returned values that are in double precision floating point format into static variables: “array_minimum” and “array_maximum”. Assume that base address of double precision array and array size are already stored in static variables: “array_pointer” and “array_size” respectively. All the arguments should be passed on the stack.