

CS 308 - Spring 1999

Homework #3, due Monday, March 8, in class.

This assignment requires you to write a subroutine in Intel 808x6 assembly language, to call this subroutine from a C++ driver program, and have the driver print out the results.

The subroutine must be written in 32-bit, flat-addressing mode (MODEL FLAT) for the i80x86. See the document “*A Tiny Guide to Programming in 32-bit x86 Assembly Language*” which is available from the course web page. You must follow the calling convention described in section 6 of that document.

This assignment is pledged (see below)

The prototype for the subroutine is:

```
void Divide ( int Input[], int InputSize,           // the array of input values
              int OutLow[], int& OutLowSize,       // the array of lower values
              int OutHigh[],                       // the array of higher values
              int Barrier );                       // the dividing value

// The int values have 32 bits. The number of elements in an array is InputSize, etc.
// All input values of less than the value of Barrier are placed into Outlow
// The other values get placed into OutHigh.
```

Your C++ driver must read in a value for Barrier and then a data vector of **int** values, compute the number of values, and print them out, together with the inputted value for Barrier. It must then call Divide, and, on return, print out the two output arrays. We expect your output to look professional, identifying and properly labelling all the data.

Use the Catlin Laboratory (the “Stacks”) to do your homework. The Borland 5.0 C++ system there uses 32 bits for integers, and the Stacks machines have the assembler installed. Refer to the Adam Ferrari manual for directions.

When you have fully tested your program, run it with the input data vector given elsewhere on the web page. **The value you must use for Barrier in this final run is -4.** Results from that run are the ones you must submit.

TURN IN:

A printout of your C++ and Assembler code.

A printout of the results of executing your program, as described above.

Documentation of your subroutine. Remember what you did in CS 201 -- -- we need User documentation, Maintainer's documentation, testing procedures, etc.

Quality of your code, and of the testing and documentation, is what counts most.....

The homework is to be pledged as your own work. Feel free to discuss issues with your friends and your advisors, but once you begin writing the code and the test plan and the documentation, **WORK ALONE**. And pledge so.