CSC-365 Computer Architecture
Fall 2008

Assignment #9

Due Nov 25, 2008 (note there is no school on the 26th so this is a Tuesday)

1.0 Recall in the notes we had the assembly code:

- **load (%eax,%edx.0,4) ➔ t.1**
- **imull t.1, %ecx.0 ➔ %ecx.1**
- **incl %edx.0 ➔ %edx.1**
- **cmpl %esi, %edx.1 ➔ cc.1**
- **jl-taken cc.1**

This code multiplied all the elements of an array together. What if instead of that we simply wanted to multiply each of the elements of two different arrays together. The assembly code would look something like this (one element is read from an array whose first element address is read from %eax, the other is from an array whose first element address is read from %ebx, and the result is written into an array whose first element address is stored in %edx, and %edi is the index to all of these arrays and %esi stores the length of the arrays):

- **load (%eax, %edi.0, 4) ➔ array_1.0**
- **load (%ebx, %edi.0, 4) ➔ array_2.0** %stride 2nd vector same way as first
- **imull array_1.0, array_2.0 ➔ %ecx.0**
- **storeaddr (%edx, %edi.0, 4)**
- **storedata %ecx.0**
- **incl %edi.0 ➔ %edi.1**
- **cmpl %esi, %edi.1 ➔ cc.1** %each array is same size so only need 1 test
- **jl-taken cc.1**

Draw a computational graph for this set of operations: