CSCI 401 Test 1

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1. You are to select a compiler to develop applications for a company with two types of computers. The company wants the best average performance with both machines. Assume all the machines are 1GHz machines.

Type	CPI 1	CPI 2	Compiler 1	Compiler 2
Arithmetic	1	1	35%	30%
Branch	6	3	25%	20%
Memory	3	5	40%	50%

   If the code is 10000 lines (for either compiler) when assembled how long does it take to run on each machine?

2. Write the MIPS assembly code for the following function. Assume the array a has been defined as size n (i.e. elements numbered from 0 to n-1). You do not need to write the code to call the function but you need to state where you assume the parameters and return address will be.

```
int poly_eval(int* a, int n, int x){
  y=a[n-1];
  for(i=n-2;i>=0;i--){
    y=y*x+a[i];
  }
  return y;
}
```

3. Perform the indicated calculations by the algorithm requested showing all steps. Show how you get the number.

   (a) -3×-6 by booth's.

   (b) $7 - 8$ by conditional sum.

   (c) 3.75×29.625 in floating point.