Lab 5 - Arithmetic

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CS311 - Computer Architecture 1

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The fifth laboratory exercise requires you to solve the questions from the end-of-chapter.

Please create files named `Question-1.asm` ... `Question-4.asm` in ebe (or in any text editor of your choice).

Question 1 - `Chapter 6.`

Write an assembly language program to compute the distance squared between 2 points in the plane identified as 2 integer coordinates each, stored in memory.

Question 2 - `Chapter 6.`

If we could do floating point division, this exercise would have you compute the slope of the line segment connecting 2 points. Instead you are to store the difference in x coordinates in 1 memory location and the difference in y coordinates in another. The input points are integers stored in memory. Leave register **rax** with the value **1** if the line segment is vertical (infinite or undefined slope) and **0** if it is not. You should use a conditional move to set the value of **rax**.

Question 3 - `Chapter 6.`

Write an assembly language program to compute the average of 4 grades. Use memory locations for the 4 grades. Make the grades all different numbers from 0 to 100. Store the average of the 4 grades in memory and also store the remainder from the division in memory.

Question 4 - `Chapter 7.`

Write an assembly program to count all the 1 bits in a byte stored in memory.

Submission

The files must be submitted through Canvas by 5pm November 11, 2016. The penalty for late submission is 10% for 1 day, 20% for 2 day, after which it will be zero. The grading rubric is given in Table 1. Each question is 25%, and is divided in the following way.

Table 1: Grading rubric

File	Aspects	Points
`Question-x.asm`	Correct result	10
	Correct use of registers	5
	Correct use of memory offsets/addressing	5
	Code comments	5