Lab #2: Multiplication and Division in MIPS Assembly

1. Introduction
This project is intended to get you familiar with some of the basic operation and instruction involved in writing an assembly program in MIPS. You will be implementing multiplication and division instructions without using the explicit multiplication and division instructions. For more information regarding multiplication and division algorithms please review lecture viewgraphs (slides 43 and 49 from arithmetic circuits) and/or sections 3.3 and 3.4 from Patterson and Hennessy Book.

2. Overview
The goal of this project is to write a function that performs integer multiplication and a function that performs integer division in MIPS without using DIV, DIVU, MUL, or MULU instructions. Provided is skeleton of code for each function. You are to write the body of each function.

3. Multiplication
For the multiplication function please edit mult.s. You are provided the two operands in $a0 and $a1 which can be up to 8-bits in length. Place the result of the multiplication in $a2. The contents of $a0 and $a1 must be preserved.

$a0 \times a1 = a2$

4. Division
For the division function please edit div.s. You are provided the divisor in $a0$ and the dividend in $a1$. Each operand can be up to 8-bits in length. The quotient of the division should be placed in $a2$ and the remainder in $a3$. The contents of $a0$ and $a1$ must be preserved.

$a1/a0 = a2 + \text{reminder } a3$

5. Hints
The code for each function can be greatly simplified by through looping. For testing you can edit op1 and op2 located at the top of the files. op1 is loaded into $a0$ and op2 is loaded into $a1$.

6. Turn-in
Once your functions are completed, name your files as lastname_div.s and lastname_mult.s (e.g. Britney Spears would have to name her files as spears_sort.s) and mail it to:

ucsb.ece.154a@gmail.com

In each file, fill in your name where it is asked for.
**The subject needs to as follows:** <first name, last name, ECE154a Project 2>
ex: Brendon Bolin, ECE 154a, Project 2