CS254 Computer Organization and Assembly Language — October 27, 2016

Homework 7

There are three programming questions for you to do. Please submit three `.s` or `.asm` files. In the settings for SPIM, as usual use a bare machine with no exception handler, and also choose "Enable Delayed Loads" and "Enable Delayed Branches". This simulates a more realistic machine with a pipelined architecture.

1. (3.33 points) **Sum of Squares**

   Write a program that computes the sum:

   $$1^2 + 2^2 + 3^2 + 4^2 + 5^2 + \cdots + 48^2 + 49^2 + 50^2$$

   Do this as above, by using the branch instruction and jump instruction to implement a terminating loop. Choose $8 to hold the sum.

2. (3.33 points) **Sum of Evens**

   Write a program that computes the sum of all the even numbers between 2 and 100:

   $$2 + 4 + 6 + 8 + \cdots + 98 + 100$$

   Do this with one counting loop. The loop just needs to increment the counter by the proper amount on each iteration. Choose $8 to hold the sum.

3. (3.33 points) **Smaller Value**

   There are two two's complement integers in the data section with symbolic addresses **x** and **y**. Compare the two integers and store the smaller one into the memory location with symbolic address "**min**". The data section in your code looks like:

```
        .data
x:      .word 10
y:      .word 5
min:    .word 0
```