HW#3 (CSC390)

Due: 02/10/2018 by 11:00PM on the Blackboard

Q1. For the following C statement write down the corresponding MIPS assembly code. Assume the variables a, b, and c are initialized with some 32bit integer values. Use $s and $t registers for the variables and temporary values. Clearly show the data segment and code segment with necessary comments. Note down the memory locations of the variables a, b, and c.

C code: c = a + (b+10)

Q2. Suppose A is an array of 6 elements, where each element is a 32bit integer value (i.e. word). Write down a MIPS assembly code that would first initialize the array with the values [10, 15, 20, 5, 30, 0] and then perform the following two C statements. Clearly show the data and code segment of your code. Note down the range of memory locations allocated after you assemble the code. After executing the code, check whether you are getting the expected results in A.

A[5] = A[3] + A[4]

A[0] = A[4] – A[3]

Q3. Load the registers $s0 and $s1 with the hex values 0x80000000 and 0xE0000000, respectively and perform the following operations:

```
add   $t0,  $s0,  $s1
sub    $t1,  $s0,  $s1
```

Are you getting the desired results in $t0 and $t1? **If not explain why.**

Q4. Write a MIPS assembly language program that will perform the following C code operations:

```
for (i = 0; i < 8; i ++) {
C[i] = A[i + 1] - A[i] * B[i + 2]
}
```

Consider the arrays A and B are initialized with the following two arrays, respectively

[10, 12, 14, 16, 18, 11, 13, 15, 17, 19] and [11, 12, 13, 14, 15, 16, 18, 20, 22, 24].

Store the results in an array of consecutive memory locations C.