

**Homework #3**  
**CSCE 2610: Assembly Language and Computer Organization**  
**Spring 2016**

**100 Points**  
**Due: 10:00 PM on Monday Feb 15<sup>th</sup>, 2016**

**Instructions:** Clearly show all the steps and complete the homework either typed in word or handwritten. **Convert the typed in document into PDF. In case of handwritten document, scan it and convert it into PDF.** Do not create an archive (zip/tar/rar) file for your submission. Upload it to blackboard on or before the due date and time. **Late submissions are not allowed.**

1. Convert the below C code to MIPS assembly code. Assume *a*, *b*, and *c* are assigned to registers \$s0, \$s1 and \$s2 respectively. **[20 points]**

```
if (a > b) {
    c = a & b;
}
else if (a < b) {
    c = a | b;
}
else {
    c = ~a;
}
c = c * 4;
```

2. Convert the below C code to MIPS assembly code. Assume *i* and *j* are assigned to registers \$t5 and \$t6 respectively, the base address of the arrays *A* and *B* are in registers \$s1 and \$s2 respectively. All the element in the array are unsigned integer. **[20 points]**

```
for (i=2; i!=j; i=i+2) {
    B[i] = A[i]/2;
}
```

3. For the following C statements, what is the corresponding MIPS assembly code? [20 points]

```
int abc (int i, int j) {  
    while (i < 100) {  
        if ((i & 234) == j) {  
            break;  
        }  
        i++;  
    }  
    return i;  
}
```

4. What MIPS instruction does the following hexadecimal number represent? [10 points]

0x001361C2

5. Write a MIPS assembly code to find and display the result of the following equation. The user should enter the values for x and y. Using MARS SPIM simulator, assemble and run the assembly code. Comment your code before uploading it to the Blackboard. **Do not convert the .asm file into PDF.** [30 points]

$$result = (2x - y) \times 32$$