July 16th, 2015 Quiz 10 – Due Friday, August 7th (11:59pm) **No late policy for the quiz.**

**Total Score** _______. Your work is to be done individually. The quiz is worth 50 points and it has 4 questions. There is a chance to get a maximum grade of 56 points, any score over 50 will be counted as having earned extra credit in quizzes. Unless a problem directly instructs you differently, there are no known errors within this document. All programming solutions will be implemented in the C programming language. You only need to write the fragment of code that directly answers each question. Unless otherwise specified you do **not** have to write a full program for any of the questions.

1. **[12 pts]** Give a quick explanation of the compilation error that results of the following program. How can you fix it? (It only needs to compile, it doesn’t need to do anything useful).

```c
typedef struct S {
    int i;
    float f;
} T;

int T(void) {
}

int main(void) {
    T();
    return 0;
}
```

2. **[12pts]** Create an **enum** of the countries in the North American continent (notice: Panama is the southernmost country in the continent)

3. **[12 pts]** Create a **union** that can hold either a character string or a value from the enum you defined in question 2.
4. [20pts] Create a function that receives an int from 0 to 255 (only the lower byte gets used), and returns as a result a int in which the four lower bits are 0 and the higher bits are the negation of the higher four bits of the number you received. Here are some examples of input and outputs:

<table>
<thead>
<tr>
<th>Input (decimal)</th>
<th>Input (binary)</th>
<th>Output (binary)</th>
<th>Output (decimal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>255</td>
<td>11111111</td>
<td>00000000</td>
<td>0</td>
</tr>
<tr>
<td>240</td>
<td>11110000</td>
<td>00000000</td>
<td>0</td>
</tr>
<tr>
<td>15</td>
<td>00001111</td>
<td>11110000</td>
<td>240</td>
</tr>
<tr>
<td>170</td>
<td>10101010</td>
<td>01010000</td>
<td>80</td>
</tr>
</tbody>
</table>

```c
int crazy_bitwise(int n) {
}
```