Problem 1 (20 points): Testing and Debugging

(10 points) Prof. Lumetta has invented the "Triplenacci" sequence! The first three elements (indices 0, 1, and 2) are 1, and all other elements are the sum of the previous THREE elements. The recursive function shown below is meant to return N^{th} element. Unfortunately, the program has a bug. In NO MORE THAN 15 WORDS, describe the bug. Then fix the program.

(the bug) _____

_____

```
int triplenacci (int n)
{
    int a;
    int b;
    int c;

    if (1 == n || 0 == n) {
        return 1;
    }
    a = triplenacci (n - 3);
    b = triplenacci (n - 2);
    c = triplenacci (n - 1);

    return (a + b + c);
}
```

(10 points) The function below is meant to compare two strings, **`s`** and **`t`**, and return 1 iff the strings match except for the case of any letters. In other words, lower-case and upper-case of the same letter are considered a match, so "eXaMpLe" and "EXamPLE" are matching strings. Sadly, the function has a bug. In NO MORE THAN 15 WORDS, describe the bug. Then fix the program.

(the bug) _____

_____

```
int stricmp (const char* s, const char* t)
{
    int diff;

    // NOTE: ASCII 'A' through 'Z' are 0x41 through 0x5A
    //       ASCII 'a' through 'z' are 0x61 through 0x7A
    while ('\0' != *s) {
        diff = *s - *t;
        if (0 != diff && 0x20 != diff && -0x20 != diff) {
            return 0;
        }
        s++;
        t++;
    }
    return ('\0' == *t);
}
```