CSCI-14 Lab 7, due 3/13/18 Name_____

Please work in groups of two or three on this. Work with people you don't usually work with.

These are pencil-and-paper exercises first, and only afterward programming. You may discuss approaches to these problems with members of your group before writing your paper solutions, but please write your own solutions. **After** (and ONLY after) everyone in your group has paper solutions and you all agree on their correctness, write a program to check your solutions. This you may do as a group, trying out your various solutions. You may have different paper solutions that work, but to work, they must produce exactly the same output as my original code. Turn in only one version for the program. The program may prompt for `n` once, save it and reset it for each loop. Put my loop first in each section, followed by your translations. The solutions must work correctly (identically as my loops) with negative, zero or positive input. (Thus you need to test with these values…) Make sure you understand anything that goes wrong! You may need to use other control structures or variables. Turn in your paper solutions in lab on the due date, and e-mail me the source and output of the program your group wrote to test them.

1. Rewrite the following code using a) a while loop and b) a do-while loop.

```
int i, n;
cin >> n;
for (i = 0; i < n; i++)
{
   cout << i << " ";
}
cout << endl;
```

a) using a while-loop:

b) using a do-while loop (careful: you must handle the user entering `n <= 0`):

2. Rewrite the following code using a) a do-while loop and b) a for loop.

```
int n;
cin >> n;
while( n > 0) {
   cout << n << " ";
   n /= 2;
}
cout << endl;
```

a) using a do-while loop:

b) using a for loop:

3. Rewrite the following code using a) a for loop and b) a while loop. This one is tricky!

```
int i, n;
cin >> n;
i = 1;
do
{
   cout << i << " ";
   i *= 2;
} while( i <= n );
cout << endl;
```

a) using a for loop:

b) using a while loop: