CSCI/CMPE 2380
Assignment 1 (100 pts)

Do the following problems. Some questions ask you to turn in code, others ask you to turn in a written answer. You may condense all answers requiring code into a single program for turn in. Turn in a printout of your source code, a printout of sample runs testing your source code, and your written answers. Code will be graded for documentation and style.

Problem 1 (10):
Run the following commands in a program and observe the result. Turn in a written description of what was output, as well as an explanation of why the values output were produced.

```cpp
int w = 2147483648;
cout << w-1 << endl;
cout << w << endl;
cout << w+1 << endl;
cout << w+2 << endl;

unsigned int u = 4294967296;
cout << u-1 << endl;
cout << u << endl;
cout << u+1 << endl;
cout << u+2 << endl;
```

Problem 2 (10):
Test the following code in an editor. Report if the answer is true or false and explain why in detail (for each comparison).

```cpp
if ( ' ' < 'a' && '6' <= '>')
    cout << "True";
else
    cout << "False";

if ( !( 'R' > 'T') || '+' < '*')
    cout << "True";
else
    cout << "False";

if ( 'A' == 65)
    cout << "True";
else
    cout << "False";
```

Problem 3 (10):
Write 2 functions "maximum" and "minimum", each which takes 3 input integers. Test your functions by running the following lines of code to get 22 and 15 respectively:

```cpp
    cout << "The largest is: " << maximum(5, 22, 18) << endl;
cout << "The smallest is: " << minimum(15, 18, 16) << endl;
```
**Problem 4 (10):** Write a nice function called "random" that computes a random number between two given input numbers. Test your function with the following code to make sure a random number between 5 and 24 is output:

```cpp
int a = 5;
int b = 24;
cout << "A random number between " << a << " and " << b << " is " << random(a, b) << endl;
```

**Problem 5 (10):** Write a function called "capital" that returns a capitalized version of an input string. Test your function with the following code to verify that "ROBBIE" is displayed:

```cpp
string name = "robbie"
cout << capital(name) << endl;
```

**Problem 6 (10):** Write a function that takes an input string and changes the string to all capital letters. Test your function with the following code to verify that "BRENDA" is displayed:

```cpp
string name2 = "brenda"
capitalize(name2);
cout << name2 << endl;
```

**Problem 7 (20):** Write a function that does integer multiplication and only uses addition. The following should output 56.

```cpp
cout << Multiply(7, 8);
```

**Problem 8 (20):** Write a function 'listPrimes' to list all the primes up to a given input integer. Test your functions with the following code:

```cpp
listPrimes(15);
```
which should display:

```
Prime Numbers up to 15: 2, 3, 5, 7, 11, 13
```

**Bonus (2):** Draw your favorite video game character.