CSCI204/MCS9204/CSCI804
Object and Generic Programming in C++
Laboratory Exercise 5 (Week 6)

Task: Overloading operators

We will reuse some definitions and implementations of the class **BigInteger** defined in the lab 3 for this task.

Define the class **BigInteger** in a file **BigInteger.h** and implement its member functions in a file **BigInteger.cpp** that can be used to store a large positive integer. The class contains two data members: a pointer of short integer and the size of the dynamic short integer array. Define the following member functions:

- The default constructor;
- An initialization constructor initializes a BigInteger instance with a char array, in which all elements are decimal digits.
- The copy constructor makes a deep copy from a BigInteger instance.
- The destructor;
- Define insertion operator and extraction operator for the class.
- Define assignment operator for the class that makes a deep copy from a BigInteger object.
- Define addition operator that returns a BigInteger object of addition result. Do not change the operands.
- Define multiplication operator for the class that returns a BigInteger object of multiplication result. Do not change the operands.
- Define comparison operator “equals to” that returns the value “true” if two BigInteger objects contain the same values.

Write the driver program include main function in a file **lab5Main.cpp** to declare instances of BigInteger, test all the overloading operators defined above.

Be careful not to submit the solutions for the lab 3 task.

Compile the files by
g++ –o task5 lab5Main.cpp BigInteger.cpp

And execute it. Your program should be run like the following example (Red data means input from keyboard)

```
./task5
Input a big integer for bi1: 567239745104730482394650169432
Input a big integer for bi2: 882323456205024318310561095
Initial bi3=1234567890
bi3 = bi1 + bi2 = 568122068560935506712960730527
bi3 = bi1 * bi2 = 500488932397662823233748695498247943120741026136737448040
bi1 is not equal to bi2
bi3 = bi2 = 882323456205024318310561095
bi3 is equal to bi2
```

Submission:

You should submit all the files to the server by 11:59 PM on Friday, 4 September 2015 via command:

submit –u your-user-name –c CSCI204 –a L5 BigInteger.h BigInteger.cpp lab5Main.cpp

and input your password.

Make sure that you use the correct file names. The UNIX system is case sensitive. You must submit all files in one *submit* command line.

After submit your assignment successfully, please check your email of confirmation. You should keep this email for the reference.

You would receive ZERO of the marks if your program codes could not be compiled correctly.

Later submission will not be accepted. Submission via e-mail is NOT acceptable.

End of Specification