Programming Project

Directions:

You will be completing an *Integer* class as a group of three members. The *Integer* class represents a mathematical integer; that is, an integer that can have than infinite length, in theory. The class contains the following fields

```
class Integer
{
  private:
  bool sign;
  Node<int>* uint;
};
```

The field *sign* represents the sign of the integer. It is false when the integer is positive or zero, and true if the integer is negative. The field *uint* holds the digits of the integer in reverse order. For instance, if the integer is -12938407, then *sign* would be true and *uint* would be the list `[7,0,4,8,3,9,2,1]`. The program **must** adhere to the following guidelines:

- ☐ The program can **only** use the libraries *iostream*, *sstream*, *fstream*, *string*, *iomanip* and *cstdlib*.
- ☐ One member is responsible for defining the following:
  - The overloaded operator that takes an int parameter. It converts the parameter into an *Integer*. The conversion must be correct and accurate.
  - The overloaded assignment operator that takes a string parameter. It converts the parameter into an *Integer* if the parameter is in the proper format; otherwise, it assigns 0 to the *Integer*. The conversion must be correct and accurate.
  - The friend equal operator. It returns true if the parameters are equal; otherwise, it returns false.
  - The friend not equal operator. It returns true if the parameters are not equal; otherwise, it returns false.
- ☐ Another member is responsible for defining the following:
  - The overloaded operator that takes a double parameter. It converts the parameter into an *Integer*. The conversion must be correct and accurate.
  - The overloaded assignment operator that takes an int parameter. It converts the parameter into an *Integer*. The conversion must be correct and accurate.
  - The friend greater than operator. It returns true if the first parameter is greater than the second parameter; otherwise, it returns false.
  - The friend greater than or equal to operator. It returns true if the first parameter is greater than or equal to the second parameter; otherwise, it returns false.
- ☐ And the last member is responsible for defining the following:
  - The overloaded operator that takes a string parameter. It converts the parameter into an *Integer* if the parameter is in the proper format; otherwise, it assigns 0 to the *Integer*. The conversion must be correct and accurate.
  - The overloaded assignment operator that takes a double parameter. It converts the parameter into an *Integer*. The conversion must be correct and accurate.
  - The friend less than operator. It returns true if the first parameter is less than the second parameter; otherwise, it returns false.
  - The friend less than or equal to operator. It returns true if the first parameter is less than or equal to the second parameter; otherwise, it returns false.
- ☐ The group is responsible for defining the following:
  - The friend istream operator. It reads into an integer until an invalid character is read.
  - The friend addition operator. It returns an *Integer* that is a sum of the two parameters.