Lab Assignment 5

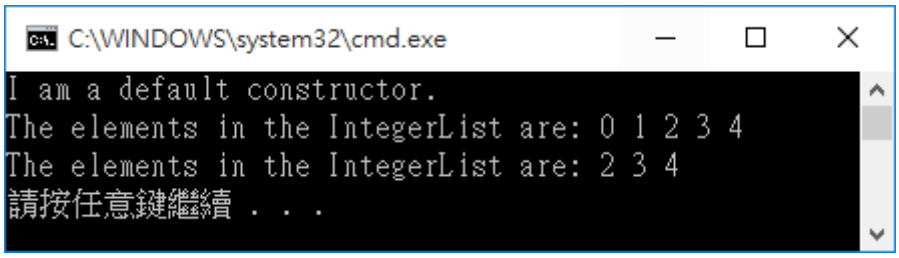
Exercise 1 (40%) (a) Write an `IntegerList` class for an array of integers. In the class, use `std::list` as your internal data representation and provide the following constructors:

- `IntegerList()` // print a message said "I am a default constructor."
- `IntegerList(unsigned nelems)` // creates an `IntegerList` with the integers `0...nelems-1`
- `IntegerList(unsigned start, unsigned end)` // creates an `IntegerList` with the range [start, end)

In addition, provide a non-member `print` function. Test your program with the client code listed below:

```
#include <iostream>
#include "IntegerList.h"
using namespace std;

int main()
{
    IntegerList a;
    IntegerList b(5);
    print(cout, b) << endl;
    IntegerList c(2, 5);
    print(cout, c) << endl;
}
```



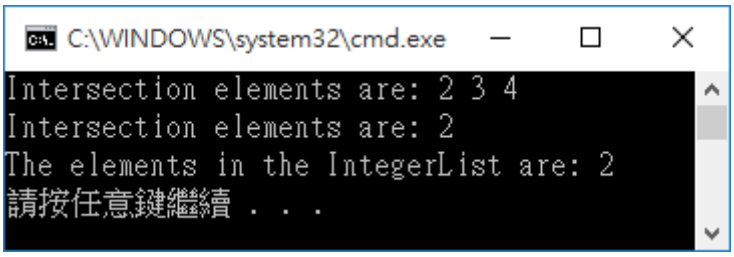
(b) Add an `intersection` member function that prints out the elements common to two arrays. Allow a sequential operation. Test your program with the client code listed below:

```
#include <iostream>
```

```
#include "IntegerList.h"
using namespace std;

int main()
{
    IntegerList a(3);
    IntegerList b(5);
    IntegerList c(2, 6);
    print(cout, c.intersection(b).intersection(a)) << endl;
}
```

Your output looks like:



Exercise 2 (40%): Write a program that allows users to continue input an integer and print them with commas if they have more than three digits. For example, -2036 and 123456789123456 would be printed as -2,036 and 123,456,789,123,456, respectively. Use ! to terminate the input. (**hint:** you might want to use `insert` member function in STL `std::string` to ease your life)