10802 CPP Midterm Exam

Contributor: SCY		

Subject: Array to integer

Main testing concept:

	Basics		Functions			
•	C++ BASICS 1		SEPARATE COMPILATION AND NAMESPACES			
	FLOW OF CONTROL		STREAMS AND FILE I/O			
•	FUNCTION BASICS		RECURSION			
	PARAMETERS AND OVERLOADING		INHERITANCE			
	ARRAYS		POLYMORPHISM AND VIRTUAL FUNCTIONS			
•	STRUCTURES AND CLASSES		TEMPLATES			
	CONSTRUCTORS AND OTHER TOOLS		LINKED DATA STRUCTURES			
	OPERATOR OVERLOADING, FRIENDS, AND		EXCEPTION HANDLING			
	REFERENCES		STANDARD TEMPLATE LIBRARY			
•	STRINGS		PATTERNS AND UML			
	POINTERS AND DYNAMIC ARRAYS					

Description:

In this task, you must write a class to convert a string into an integer. For example, with the given string "1234", this class should be able to convert it into a integer 1234. Although there are built-in functions of "atoi" in the <cstring> library and the "stringstream" class which achieve the same conversion, this task require to write your own code to achieve the same goal.

Please implement a class named **Atoi** to convert a string to an integer, and the following lists out the requirement of the class.

- The class Atoi has a data member **beConverted** in the type of std::string to store the original string value.
- The class Atoi has two constructors:
 - ➤ Atoi(): Construct a class Atoi and set its member beConverted to "".
 - Atoi(std::string s): Construct a class Atoi and set its member beConverted to s.
- You should also implement the following member functions:
 - ➤ void SetString(std::string s): Set the member beConverted to s.
 - > std::string GetString(): Return the member beConverted.
 - ➤ Int Length(): Return the length of the digits in member beConverted.
 - **bool IsDigit()**: Return true if the member **beConverted** can be converted into an integer, or return false otherwise.
 - > int StringToInteger(): Convert the member beConverted to an integer and return.

Input:

A series of string.

^{**}The main() function in your submission will be replaced when judging.

^{**}The sample main() function is in "Other Notes" section below, please copy it as your main

function to test your program.

Output:

The result of executing your program with the given main function.

Sample Input / Output : Sample Input	Sample Output
	4
	520
	0520
	4
	2
	5
	05
	4
	4
	1120
	1120
	4
05	2
11	11
11	11
23	4
	4
-10	2320
	2320
-11	4
0046	2
8946	23
1891231	23
1031231	4
	4
	-1020
	1020
	4
	2
	-10
	10
	4
	4
	-1120
	1120

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49420
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494
00494
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- Easy, only basic programming syntax and structure are required.
- ☐ Medium, multiple programming grammars and structures are required.
- ☐ Hard, need to use multiple program structures or complex data types.

Expected solving time:

10 minutes

Other notes:

```
int main() {
     string beConverted;
     while (cin >> beConverted) {
           Atoi atoi(beConverted + "20");
           if (atoi.IsDigital()) {
                cout << atoi.Length() << endl;</pre>
                cout << atoi.StringToInteger() << endl;</pre>
                cout << atoi.GetString() << endl;</pre>
                cout << sizeof(atoi.StringToInteger()) << endl;</pre>
           }
           atoi.SetString(beConverted);
           if (atoi.IsDigital()) {
                cout << atoi.Length() << endl;</pre>
                cout << atoi.StringToInteger() << endl;</pre>
                cout << atoi.GetString() << endl;</pre>
                cout << sizeof(atoi.StringToInteger()) << endl;</pre>
           }
     return 0;
```