# CPP 程式設計題

命題者：**SCY**

題目名稱(中文/英文)：**Array to integer**

主要測試觀念：

| 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 | | |

題目說明：

Write a class that can convert a string into an integer. For example, the function should return an integer 1234 with the given string "1234". If you do some research, you will find that there is a function named "atoi" and also the "stringstream" class that can do this conversion for you. However, in this programming project, you should write your own code to do the conversion. Implement a class named **Atoi** to transform a string to an integer.

● The class Atoi has an attribute named **beTran(string)** to store the original string value.

● The class Atoi has two constructors:
  ➢ **Atoi()**: Construct a class Atoi where **beTran** is "".
  ➢ **Atoi(string s)**: Construct a class Atoi where **beTran** is **s**.

● You should also implement the following member functions:
  ➢ **SetString(String s)**: Set **beTran** of this class to **s**.
  ➢ **GetString()**: Return **beTran** of this class.
  ➢ **Length()**: Return the length of **beTran**.
  ➢ **IsDigital()**: Return true if **beTran** can be transformed into an integer, otherwise return false.
  ➢ **StringToInteger()**: Convert **beTran** to an integer and return.

輸入說明：

A series of string.

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

**The main() function is in "Other Notes", please copy it as your main function.

## 輸出說明：

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

## IO 範例：

| | Sample Input | Sample Output |
|---|---|---|
| 第一組測資與輸出 | 05<br><br>11<br><br>23<br><br>-10<br><br>-11<br><br>8946<br><br>1891231 | 4<br>520<br>4<br>2<br>5<br>4<br>4<br>1120<br>4<br>2<br>11<br>4<br>4<br>2320<br>4<br>2<br>23<br>4<br>4<br>-1020<br>4<br>2<br>-10<br>4<br>4<br>-1120<br>4<br>2<br>-11<br>4<br>6<br>894620<br>4<br>4<br>8946<br>4 |

| | | 9 |
|---|---|---|
| | | 189123120 |
| | | 4 |
| | | 7 |
| | | 1891231 |
| | | 4 |
| 第二組 | 46506<br><br>-096504<br><br>56400<br><br>00494 | 7<br>4650620<br>4<br>5<br>46506<br>4<br>8<br>-9650420<br>4<br>6<br>-96504<br>4<br>7<br>5640020<br>4<br>5<br>56400<br>4<br>7<br>49420<br>4<br>5<br>494<br>4 |
| 第三組 | | |

## 附屬資料：

☑ 解答程式：ArrayToInteger.cpp(檔名)
☑ 測試資料：input.txt, output.txt

□ 易，僅需用到基礎程式設計語法與結構
□ 中，需用到多項程式設計語法與結構
■ 難，需用到多項程式結構或較為複雜之資料型態或結構

**解題時間：30 分鐘。**

## 其他註記：

```
int main() {
    string beTrans;
```

```cpp
    while (cin >> beTrans) {
        Atoi atoi(beTrans + "20");
        if (atoi.IsDigital()) {
            cout << atoi.Length() << endl;
            cout << atoi.StringToInteger() << endl;
            cout << sizeof(atoi.StringToInteger()) << endl;
        }

        atoi.SetString(beTrans);
        if (atoi.IsDigital()) {
            cout << atoi.Length() << endl;
            cout << atoi.StringToInteger() << endl;
            cout << sizeof(atoi.StringToInteger()) << endl;
        }
    }

    return 0;
}
```