**10802 CPP Midterm Exam**

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| **Contributor︰SCY** |
| **Subject：Array to integer** |
| **Main testing concept：**   |  |  | | --- | --- | | **Basics** | **Functions** | | * C++ BASICS 1 * FLOW OF CONTROL * FUNCTION BASICS * PARAMETERS AND OVERLOADING * ARRAYS * STRUCTURES AND CLASSES * CONSTRUCTORS AND OTHER TOOLS * OPERATOR OVERLOADING, FRIENDS,AND REFERENCES * STRINGS * POINTERS AND DYNAMIC ARRAYS | * SEPARATE COMPILATION AND NAMESPACES * STREAMS AND FILE I/O * RECURSION * INHERITANCE * POLYMORPHISM AND VIRTUAL FUNCTIONS * TEMPLATES * LINKED DATA STRUCTURES * EXCEPTION HANDLING * STANDARD TEMPLATE LIBRARY * PATTERNS AND UML | |
| **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 | | 05  11  23  -10  -11  8946  1891231 | 4  520  0520  4  2  5  05  4  4  1120  1120  4  2  11  11  4  4  2320  2320  4  2  23  23  4  4  -1020  1020  4  2  -10  10  4  4  -1120  1120  4  2  -11  11  4  6  894620  894620  4  4  8946  8946  4  9  189123120  189123120  4  7  1891231  1891231  4 | | 46506  -096504  56400  00494 | 7  4650620  4650620  4  5  46506  46506  4  8  -9650420  09650420  4  6  -96504  096504  4  7  5640020  5640020  4  5  56400  56400  4  7  49420  0049420  4  5  494  00494  4 | |
| **■ 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;  cout << atoi.StringToInteger() << endl;  cout << atoi.GetString() << endl;  cout << sizeof(atoi.StringToInteger()) << endl;  }  atoi.SetString(beConverted);  if (atoi.IsDigital()) {  cout << atoi.Length() << endl;  cout << atoi.StringToInteger() << endl;  cout << atoi.GetString() << endl;  cout << sizeof(atoi.StringToInteger()) << endl;  }  }  return 0;  } |