CPP 程式設計題

命題者：LYQ
題目名稱(中文/英文)：My vector

主要測試觀念：(See below)

Basics	Functions
☐ C++ BASICS	☐ 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 REFERENCES	☐ EXCEPTION HANDLING
☐ STRINGS	■ STANDARD TEMPLATE LIBRARY
■ POINTERS AND DYNAMIC ARRAYS	☐ PATTERNS AND UML

題目說明：

Implement a class named **MyVector**, which is similar to STL vector. We will give you a file named main.cpp, you shouldn't modify the file because we will replace the file to test your program, but you could write your code in MyVector.h.

You CAN NOT include any STL container in your program such as **std::vector, std::array, std::deque**. You should maintain your own data structure, such as built-in array.

MyVector<Type> has 5 methods that you must implement to manipulate or represent your data structure:

- *push_back* (**Type** element): Add (or insert) an element at the last position of your data structure.
- *pop_back* (): Throw up (or delete) last position of your data structure.
- *size* (): Return current length of your data structure.
- *clear* (): Clear (or throw up) all elements.
- **MyVector**[int index]: Return the element value of the specific position of your data structure.

You don't need to consider any exception because it is not the major intention of this question.

輸入說明：

Input a command to execute the corresponding function in the main.cpp that we offered.

輸出說明：

The output is done by main.cpp that we offered.

IO 範例：

Sample Input	Sample Output
1	
9	---------------------
1	MyVector Implementation
8	
1	---------------------

7	1.Insert Element into the MyVector
1	2.Delete Last Element of the MyVector
6	3.Size of the MyVector
1	4.Display by Index
5	5.Clear the MyVector
1	6.Exit
4	Enter your Choice: 1
1	Enter value to be inserted: 9
3	Enter your Choice: 1
1	Enter value to be inserted: 8
2	Enter your Choice: 1
1	Enter value to be inserted: 7
1	Enter your Choice: 1
4	Enter value to be inserted: 6
2	Enter your Choice: 1
4	Enter value to be inserted: 5
2	Enter your Choice: 1
2	Enter value to be inserted: 4
3	Enter your Choice: 1
4	Enter value to be inserted: 3
5	Enter your Choice: 1
4	Enter value to be inserted: 2
3	Enter your Choice: 1
	Enter value to be inserted: 1
	Enter your Choice: 4
	Displaying Vector by Index: 9 8 7 6 5 4 3 2 1
	Enter your Choice: 2
	Delete Last Element Inserted
	Enter your Choice: 4
	Displaying Vector by Index: 9 8 7 6 5 4 3 2
	Enter your Choice: 2
	Delete Last Element Inserted
	Enter your Choice: 2
	Delete Last Element Inserted
	Enter your Choice: 3
	Size of Vector: 6
	Enter your Choice: 4
	Displaying Vector by Index: 9 8 7 6 5 4
	Enter your Choice: 5
	Vector Cleared
	Enter your Choice: 4
	Displaying Vector by Index:
	Enter your Choice: 3

	Size of Vector: 0
	Enter your Choice:

附屬資料：

☑資料：main.cpp, input.txt, out.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：40 分鐘

其他註記：