

**Due: 6/28 (11:59PM)**

**Reversing a Dynamic Array of Characters:**

- Let us develop a C++ program with the following requirements.
  1. The program first asks user to enter the number of elements for an array. Let's call this number  $N$ .
  2. It then creates a *dynamic array* of size  $N + 1$ , containing  $N$  random lowercase alphabet letters between 'a' and 'z'. Make sure the last element is a null character '\0'.
    - Here, make sure to use dynamic memory allocation (using `new` command) to allocate memory space for the array, which is exactly why we call it a *dynamic array*.
  3. After creating the array, the program displays the entire array.
    - Here, you must define and use a function *showArray* to display the array. This function must have the following prototype:

```
void showArray(char *);
```
    - Note that it does not pass the array size as a parameter (you don't need it when you use pointer).
    - You are NOT allowed to use array index or array bracket [ ] within this function to access elements. Instead, use pointer to do so.
  4. Then reverse the elements of this array. Note that the original array is changed as a result.
    - Here, you must define and use a function *reverseArray* to reverse the array elements. This function must have the following prototype:

```
void reverseArray(char *);
```
    - Note that it does not pass the array size as a parameter (you don't need it when you use pointer).
    - You are NOT allowed to use array index or array bracket [ ] within this function to access elements. Instead, use pointer to do so.
  5. After reversing the array, call *showArray* function again to display the reversed array.
  6. Ask if the user wants to continue. If yes, return to Step 1. If no, terminate the program. Before going back to Step 1 or terminating the program, make sure to release the memory space occupied by the dynamic array (using `delete` command).

**Example run:**

How many characters? 20

apdtcmfzaveydavfqki

ikqfvadyevazflmctdpa

Continue? (y/n) y

How many characters? 30

awmzsnmbaeuraxcruddzavocnodpgg

ggpdoncovazddurcxarueabmnszmwa

Continue? (y/n) y

How many characters? 15

ajiyikptmmzgrrlu

ulrgzmmtpkijija

Continue? (y/n) n

**What to submit:**

- All source files (.cpp, .h) needed for compilation

**How to submit:**

- Use Canvas Assignment Submission menu to submit the assignment electronically at Canvas.
- Make sure to zip all your files into hw2.zip, then submit your hw2.zip as a single file.

**Policy**

- Make sure all your C++ programs properly compile and run on Eclipse C++.
- Projects will be graded 20% on style/standards and 80% on proper execution. Make sure to follow the coding standards posted on the course webpage.
- At the beginning of each file (.cpp, .h), provide comments specifying the author, date, and a brief description of the file.
- Each source file (.cpp, .h) must contain enough comments here and there to make it easy to follow your code. Insufficient comments could lead to loss of points.
- Non-compilable program will get almost no credit (e.g., executable code not produced due to compile errors).

- Non-working program will get almost no credit (e.g., the executable is terminated immaturely due to run-time errors).
- Copying other's code is strictly prohibited. If identical (or nearly identical) submissions are found among students, every student involved will get automatic zero for the assignment. The same goes for copying existing source code from the internet.