Lab 5: Create Your Own String Class

This lab requires you make use of **dynamic array** and **ArrayList data structure** taught in class to create your own String class.

In class we showed how to use recursive function call technic to show Recursive Circle art and Recursive Square art (Here attached the two screenshots). The demo code source files could be found from the "Class Notes" folder on Canvas.

1. Your String class should be defined in separate files (header <.h> file and source <.cpp> file).
2. Default constructor and overloaded constructor. The overloaded constructor requires accepting a string literal (const char*) parameter to initialize the String object.
3. Implement 6 public operations (member functions or methods):
   (1) void add(char datum); //append a character to your string.
   (2) void remove(int index); //remove the corresponding character of the index in your string.
   (3) void insert(int index, char datum); //insert a character at the index in your string;
   (4) char get(int index); //return the character of the index in your string.
   (5) int lengh(); //return the length of your string (how many characters in your string).
   (6) void clear(); //make your string an empty string.
4. Rules of three: destructor, copy constructor and assignment operator overloading.
5. Simple error checking. (For example: if I want to do remove operation of an empty string, then it should output a prompt like "String is empty!" If you try to operate at an invalid index (like negative index or index larger or equal to the string length, then it should output a prompt like "Index is invalid"))
6. Proper memory management.
7. No compiling errors.
8. Good submission.

Grading Rubric:

1. Define class in header and source separate files: 5 pts.
2. Default constructor and overloaded constructor: 5 pts.
3. Implement 6 public operations: 25 pts.
4. Rules of three: 30 pts.
5. Simple error checking: 5 pts.
6. Proper memory management: 10 pts.
7. No compiling errors: 10 pts.
8. Good Submission: 10 pts.