Problem 1: Implement a linked list based Stack class using the following definition.

```cpp
class Stack {
private:
    class Node {
        public:
            //put the pointer and data in here
    };
    Node *Top;

public:
    //setup initial conditions
    Stack();
    //delete all dynamic memory, etc.
    ~Stack();
    //add x to top of the stack
    void Push(char x);
    //remove the top item from the stack and return it
    char Pop();
    //return true if the stack is empty, otherwise return false
    bool Empty();
};
```

Problem 2: Write a program that takes any string from the user and runs the palindrome test on it. We discussed this algorithm in class. This should use two stacks created using the class from Problem 1.

The basic process is:
1. Push the string onto one stack
2. Pop half the stack and push it onto the second stack
3. Check the parity issue
4. Pop both stacks simultaneously and compare
5. Output results

Problem 3: Your job is to write the fill function for a raster-based graphics program. The graphic is stored in a 2D array of symbols. The input to the function is the row and column cell of the pixel (symbol) to be changed and what symbol to change it to. The goal is to fill the enclosed shape (of one symbol) with the new symbol. This should be done recursively.

The program should dynamically read in an ascii art file, then prompt the user for the cell to fill and what symbol to fill it with. Then allow the user to save the new art.

Example run:
Select from the options: (L)oad art, (F)ill, (S)ave art
Choice? L
File to read: art.txt

Select from the options: (L)oad art, (F)ill, (S)ave art
Choice? F
Cell to begin Fill:
Cell Row: 5
Cell Column: 27
Symbol: +

Select from the options: (L)oad art, (F)ill, (S)ave art
Choice? S
File to write: artn.txt

**Bonus:** (5 points) Modify Problem 2 to work if you ignore spaces, apostrophes, quotation marks, commas, periods, etc., and to not distinguish between capital and lowercase letters. It should only compare letters.

**Bonus:** (2 points) Favorite video game?