The design of the assignment 4

UML

The Palindrome class

Palindrome
- String_reversed : string
+ reverseString(string): string + isPalindrome(string): bool

The Fibonacci class

Fibonacci
- n : int
+ n_ Fibonacci(int) : int

The meaning of each element and method:

1. Palindrome class:
   - String_reversed : the reversed string, whatever the original string is Palindromic or not. This string is the result of the first output.
   + reverseString(string): the method which reverse the string and get the reversed string, first we include an argument string_1, which is for the player to input the string which should be reversed, and then use if loop, if the size of string_1 is 1, the reversed string is equal to the original string then output the string. If the size is not 1, we use recursion and the substr function, we can easily get the reversed string.
   + isPalindrome(string): this method is for judge weather the reversed string is palindromic or not. Because we finished the reverseString() function. So we can use the argument of reverseString(), the new argument string_2 is equal to the string_1 which belong to the reverseString(); then use if loop, if original string equal to the reversed string, return 1; else return 0;
2. Fibonacci class:
   - n : the n th number of Fibonacci.
   + n_Fibonacci(int): we use if loop set the first 2 value is 1 and 2, because Fn=F(n-1)+F(n-2), then we use recursion, return the n th Fibonacci number,
3. main.cpp
   1. We need to create object Palin , and a string ‘str’ which allow user to input the original string. Then ‘a’ means the input number, and ask user to input ‘a’, then out put the reverseString() and isPalindrome() and use for loop to list the Fibonacci number from 1 to ‘a’.

Test:

Input	Output	Expect
apple 6	elppa 0 8	elppa 0 8
appa 20	appa 1 6765	appa 1 6765

glenelg sa	glenelg 1	glenelg 1