COMP251 - Lab5

Goal: This lab will give you practice with recursive thinking.

Getting Started
Read the lectures to answer the question.

1. We want to write a java program, `langValidator.java` that reads a string and determines whether this string belongs to the following language or not.

$L = \{w\$w' \mid w \text{ is possibly an empty string of characters except } \$, \text{ and } w' = reverse($

These are some examples:

a$a belongs to L
$ belongs to L
$$$ does not belong to L (w should not contain '$')
abab$abab does not belong to L (abab is not the reverse of abab)

Download the `langValidator.java` (you can find it in the lab directory). This file reads strings from a file (one string per line) and passes the string to a method `isValidString()`. You **need** to implement this method using recursion (your method should be **recursive**!)

Submission

Put all source codes (.java files) in one folder, zip it and upload it on blackboard.

Questions for your practice

Note: You do not need to submit the answer to these questions. It is just for your practice.

1. Consider the following mystery method. Trace it for mystery("01101", 4) ; try to draw a tree of all function calls (you do not need to submit the tree, just briefly explain it and write the final result of calling mystery("01101", 4) . Give a high-level description of what the method does.

```
int mystery(String s, int last) {
   if (last < 0)
```

```
      return 0;
   if (s.charAt(last) == '0')
      return 2 * mystery(s, last-1);
   return 1 + 2 * mystery(s, last-1);
}
```

2. Write a recursive function convert a decimal number into a binary number, printing the binary number (You can write a pseudocode, but make sure there is no bug and you consider all special cases).

```
public static void decToBin(int num){
// Your code
}
```