COMP251 - Lab4

Goal: This lab will give you practice with queue and stack.

Getting Started
You cannot have a partner for this lab. You can 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.
$L = \{w\$w' \mid w \text{ is possibly an empty string of characters except } \$, \text{ and } w' = reverse(w)\}$

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 complete this method.
Requirement: you should use ADT Stack to solve this problem.
*You can use Stack from java.util

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. What does the following code fragment print when n is 50? Give a high-level description of what the code fragment does when presented with a positive integer *n*.

```
Stack stack = new Stack();
while (n > 0) {
```

```
     stack.push(n % 2);
     n /= 2;
}
while (!stack.isEmpty())
     System.out.print(stack.pop());
System.out.println();
```

2. What does the following code fragment do? Give a high-level description of what the code fragment does

```
Queue q = new Queue();
q.enqueue(0);
q.enqueue(1);
for (int i = 0; i < 10; i++) {
    int a = q.dequeue();
    int b = q.dequeue();
    q.enqueue(b);
    q.enqueue(a + b);
    System.out.println(a);
}
```