**Lab 11**

**(Queues and Recursion)**

**Problem A:**

You are given a list of integers as input that you should add to a queue. If the integer at the beginning of the queue is an even number, you should remove it from the queue; else, if the integer at the beginning of the queue is odd, you should remove two elements from the queue. Keep repeating this until the queue is empty. The input guarantees that the queue will be empty in the end and no runtime errors will occur. The first line of input n is the number of test cases followed by n lists. Each list begins with an integer t representing the number of integers in the list, and then t integers follow. As output, you should print on each line the number (or numbers) removed.

**Sample Input:**

3

3234

6123548

584216

Test case 1:

 2

 34

 Test case 2:

12

35

 4

8

Test case 3:

 8

 4

 2

 16

<http://www.javaproblems.com/2013/12/adding-or-removing-odd-and-even-numbers.html>

**Problem B:**

|  |
| --- |
| **Machine** |
| - weight : int - cost : int  |
| //constructor and set/get  |

|  |
| --- |
| **Assembler** |
| - machines : Queue<Machine>  |
| + Assembler() + enqueueMachine(machine : Machine) : void+ finishMachine() : void+ getCurrentMachine() : Machine + toString() : String |

Implement the previous two classes.

Class machine has two private variables with a constructor and setters and getters. The Assembler class has a Queue of machines with the following functions:

* enqueueMachine(machine : Machine): adds a machine to the queue
* finishMachine(): removes the machine at the front of the queue
* getCurrentMachine(): returns the machine at the front of the queue

Solution: <http://www.javaproblems.com/2013/12/creating-queue-machine-in-java.html>

**Problem C:**

Write a recursive method that checks if a String is a palindrome.

Solution: <http://www.javaproblems.com/2013/12/recursive-method-that-checks-if-string_17.html>

**Problem D:**

Write a recursive method that computes the factorial of a given number.

Solution: <http://www.javaproblems.com/2013/12/recursive-factorial-method-in-java.html>

**Problem E**:

Write a recursive method that computes the Fibonacci value of a given number. The Fibonacci sequence is as follows: 1, 1, 2, 3, 5, 8,..

 For example, Fib(5) = 8

Solution: <http://www.javaproblems.com/2013/12/recursive-factorial-method-in-java.html>

**Problem F:**

Write a recursive function that converts an integer into its binary number representation.

Solution: <http://www.javaproblems.com/2013/12/recursive-method-that-checks-if-string_17.html>