

Due : Oct. 10 (Wed.), 13:00

Late submission is allowed until Oct. 12, 13:00 with deduction of 20%

General Notes

- READ THIS HOMEWORK GUIDELINE CAREFULLY. If you do not follow the guidelines, you may receive a 0 regardless of whether your code works or not.
- Do not use any IDEs (Eclipse, IntelliJ IDEA, etc.)
 - We recommend Sublime Text (Linux/Mac/Windows), Atom (Linux/Mac/Windows), Notepad++ (Windows), or TextWrangler (Mac).
 - IDEs often create a “package” of your code, which breaks the autograder.
 - If you know how to fix the package problem, you can use any IDE you want. However, we will not answer any questions related to this problem since we have already recommended a solution.
- Do not change any method or class signatures. You should only edit inside of the functions. If your code changes any class or method names or signatures, you will receive an automatic 0. You should not implement any other functions or instance variables besides the ones that are provided, unless explicitly allowed.
- Make sure your code compiles. Non-compiling code will automatically receive a 0. If you have a problem that is causing you to not be able to compile, it may be better to just comment out the incorrect code and return a dummy value (something like null or -1) so the rest can compile.
- Make sure that your code does not print out anything (there should be no `System.out.println` in your code). You will receive an automatic 0 if your code outputs something to `STDOUT` during the tests.
- To ensure that your code will be accepted by the autograder, you should submit your code on YSCEC, download it again, recompile it and check the provided test suite. This way, you know that the file you are submitting is the correct one.

Overview

This assignment consists of two parts, implementing a linked list and solving a table filling problem using recursion.

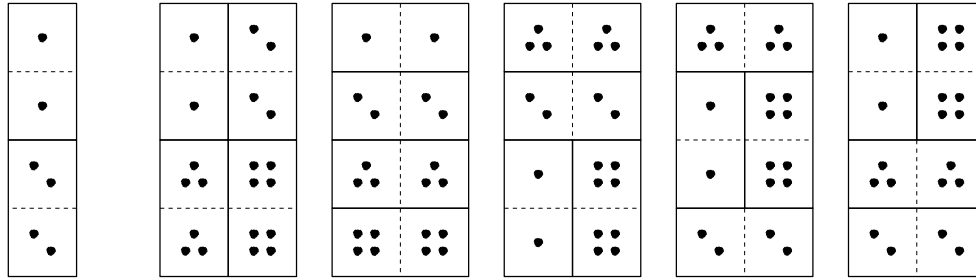
1 Circular Doubly Linked List

In this assignment, you will implement a doubly linked list in circular setting. You need to implement the methods in skeleton code to work properly. For the implementation details, please refer to the comment in each of the methods. You may not modify the provided Node.java file.

2 Filling the Board

You will count all possible ways to fill a $4 \times n$ board using only domino blocks (1×2 or 2×1 tiles). You need to implement your code in recursive manner.

For example of input '2', you should return '5' since there are 5 ways to fill a 4×2 board; for '1', you should return '1'. The 4×0 board has 1 way to fill; leave it as is. The input number n will be a nonnegative integer.



All of the ways to fill the example boards using domino blocks.

You are free to implement any algorithm that you wish, but you must code it yourself (for example, you cannot just call Java's sort on your array or copy a solution from the internet). We will only be testing that your code produces a correct result and terminates within a reasonable amount of time.

General Directions

- Write your name and student ID number in the comment at the top of the all source files you will hand in.
- Implement all of the required functions in the appropriate class.
- You should not import anything that is not already included in the file.
- Pay careful attention to the required return types and edge cases.

Grading Policy

You will receive a 0 if you did not follow the guidelines or if your code does not compile. After the due date, there is a two day grace period during which you can still submit your homework. Homework submitted during this time will receive a 20% deduction.

Submission Procedure

To submit your homework, simply drag and drop each files individually into the attachment box on the YSCEC assignment page. You *must not* zip them or place them in any folder. For this assignment, you should submit only the following files:

- CircularDoubly.java,
- FillBoard.java,
- (student_id).txt (not including the parentheses).

Inside of the (student_id).txt file, you should include the following text with your name at the bottom.

*In completing this assignment, I pledge that I have not given nor received
any unauthorized assistance.*

[WRITE YOUR NAME IN ENGLISH]

If this file is missing, you will get a 0 on the assignment. It should be named *exactly* your student id, with no other text. For example, *2018123456.txt* is correct while something like *2018123456_hw1.txt* will receive a 0.

Compiling

You can compile your Java code using the following command.:

```
% javac -encoding ISO-8859-1 -cp ".:junit-4.10.jar"  
[Java source].java (on Linux/Mac)
```

```
> javac -encoding ISO-8859-1 -cp ".;junit-4.10.jar"  
[Java source].java (on Windows)
```

You can also test your implementation using the following command.:

```
% java -cp ".:junit-4.10.jar" [TestRunner] (on Linux/Mac)
```

```
> java -cp ".;junit-4.10.jar" [TestRunner] (on Windows)
```

Testing

We have provided a small test suite for you to check your code. You can test your code by compiling and running the tester program. If any of the test cases fail, you will be notified.

Note that the test suite we will use to grade your code will be much more rigorous than the one provided here (and not necessarily a superset of the provided tests). You should consider making your own test cases to check your code more thoroughly.