

# Assignment 2

Due Date: March 13th, 2019  
(No late submissions will be accepted)

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## General Instructions

Each assignment has a written part and a programming part. For a written part, please write your answers in a pdf file, and for a programming part, follow the instructions below:

- Write your code in submission.cpp
- TA will test your code with Visual Studio on Windows OS, so please write your code in the same environment.
- Obviously, you must NOT use a library like the Standard Template Library (STL)
- Submit only C ++ files, not the entire project
- You should modify the code in submission.cpp between

```
/* BEGIN_YOUR_CODE */
```

and

```
/* END_YOUR_CODE */
```

You can add other helper functions outside this block if you want.

## Written Problems

Do the following problems in the textbook and note that you need to show your work (i.e., not just the answer) for exercises.

### Problem 1 [2 points]

Do the exercise *R-4.13* in the textbook.

### Problem 2 [2 points]

Do the exercise *R-4.32* in the textbook.

**Problem 3 [2 points]**

Do the exercise C-4.2 in the textbook.

**Problem 4 [3 points]**

Do the exercise C-4.17 in the textbook.

**Problem 5 [3 points]**

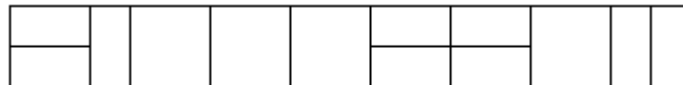
Do the exercise C-4.24 in the textbook.

## Programming Problems

**Problem 1. Tiling problem**

Given a "2 x N" board, count the number of ways to tile the given board using the 2 x 1, 1 x 2 and 2 x 2 tiles.

**Figure 1** is one way to fill "2 x 17" board.



**Figure 1**

<Input>

Board width N

<Output>

Number of all cases mod 100

**Problem 1a [3 points]**

Implement the algorithm to satisfy the above conditions in submission.cpp. (You should use the technique of induction.)