Data Structure

(Semester One, 2015-2016)

Laboratory 01

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1. Given m and n, draw the rectangle with the size m x n.

Example:
Input:
5 4

Output:

```
+---+
|aaa|
|aaa|
+---+
```

2. Put the M number of the identical eggs onto the N number of identical plates. By assuming that some plates can be empty, output the total number of different solutions. For example, M=8 and N=3, the solution of 6-1-1 (which means six eggs on the 1st plate, one egg on the 2nd and 3rd plates) is equal to 1-6-1.
   The first line of the input file contains an integer t ($1 \leq t \leq 50$), which is the number of test cases. Each test case consists of two numbers, M and N.

   Example:
   Input:
   1
   8 6

   Output
   20

3. Given the N student records (student name, ID and scores of three subjects), sort the records in descending order (from high to low) using the average scores. If the average scores are the same, the student with smaller ID should be displayed first. The first line of the input file contains an integer t (1<= t<=10), the number of students. Each of the next rows contains the record of a student: Name, Student ID (six digits), scores of three subjects. Each data is separated by a “space”.

   Example:
   Input:
   3
   Lily 000001 80 70 90
   Job 000002 80 90 100
   David 000003 100 70 100

   Output:
   Job 000002 80 90 100
   David 000003 100 70 100
   Lily 000001 80 70 90

4. You are required to use POINTER to handle this question.
   Given a series of letters, count the number of occurrences of every letter (not case-sensitive). The result should be sorted in alphabetic order.

   Example:
   Input:
   Welcome to South China University of Technology!

   Output:
   C 3
   E 4
   G 1
   H 3
   I 3
   L 2
   M 1
   N 3
   O 6
   R 1
   S 2
   T 4
   U 2
   V 1
   W 1
   Y 2