Java Software Development Final Exam (June 18, 2020)

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Problem 1. Pyramid (35%)

Problem Description

Let the user input a number n from keyboard, print a hollow pyramid inside a rectangle with height n.

Input Format

A single number n $(2 \leq n \leq 100)$ from **keyboard(stdin)**.

Output Format

A hollow pyramid inside a rectangle with height n.

Example

Sample Input:	Sample Output:
2	.*. ***
3	..*.. .*.*. *****
4	...*... ..*.*.. .*...*. *******

Problem 2. Bulls and Cows (35%)

Problem Description

Given two numbers n_1 and n_2 from arguments of the main method, where the lengths of their digits are equal, and there is no repeating digits in n_1 or n_2 itself.

For every digit in n_1, if it also appears in n_2 at the same position, it's called an A, but if it appears in n_2 with a different position, it's called a B.

Please calculate how many A and B hit between n_1 and n_2.

Input Format

Two numbers n_1, n_2 from **arguments(args)**. The length of each number will ≤ 10, without repeating digits.

Output Format

The number of A and B hits, with ?A?B format

Example

Sample Input:	Sample Output:
12345 54321	1A4B
0123 1089	0A2B

Problem 3. Permutations (40%)

Problem Description

Find the permutations of a string.

Input Format

The input is given from the first program **argument(args)**. You can assume that there is no duplicated character in the string.

String length $\leq$ 50

Output Format

Each permutation is separated by a newline character ('\n'). You should fix the first character and permute the other characters, then fix the second character and so forth.

Example

Sample Input:	Sample Output:
ABC	ABC ACB BAC BCA CAB CBA
9527	9527 9572 9257 9275 9752 9725 5927 5972 5297 5279 5792 5729 2957 2975

	2597 2579 2795 2759 7952 7925 7592 7529 7295 7259