C   Hamming Base

You are given **N** integers in base-**N** each of them having exactly **M** digits (may be with some leading zeros). Two integers are called **K**-similar if they have the same digits in exactly **K** positions. For example 321 and 213 are **0**-similar. 3456 and 6453 are **2**-similar, 123 and 453 are **1**-similar. You want to change these given **N**-integers in such a way that each pair of these integers are **0**-similar. To achieve this goal you can change the integers in several steps. In a single step you can change a single digit of a single integer by 1 (incrementing or decrementing). But you can't decrement if the digit is **0** or you can't increment if the digit is **N-1**.

You need to achieve your goal in minimum number of steps.

Input

Input starts with an integer **T (≤ 50)**, denoting the number of test cases.

Each case starts with a line containing two integers **N (2 ≤ N ≤ 2000)** and **M (1 ≤ M ≤ 10)**. Each of the next **N** lines contains **M** integers between **0** and **N-1** inclusive. These **M** integers form an **M** digit number in base **N**.

Output

For each case, print the case number and the minimal steps required to achieve your goal.

Sample Input	Output for Sample Input
2 3 3 0 0 0 0 0 0 0 0 0 4 2 0 0 0 0 0 2 2 0	Case 1: 9 Case 2: 8

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