Magic Card

locked

Problem Submissions

Time Limit: $C/C++$ $(2s)$, $Java$ $(3s)$
Memory Limit: $512MB$

Mr. Rakib has n assets where $asset_i$ represents the price of the $i'th$ asset. He distributed his first m assets to Ratul and remaining of the assets to Rahat.

You have p magic cards each of which can modify the price of any one asset. A magic card is a pair of single-digit numbers (x, y) which can replace a digit x from a price of an asset to the digit y. Initially the price of any asset is without any leading zeroes, but it can have leading zeroes after the use of a magic card.

You can choose a subset of magic cards from the p cards where **every x from the card pairs must be distinct**. Each of the cards from the chosen subset can be used **at most once**. Also note that **you cannot use more than one card on any digit**. *Read the sample explanation for further clarity*.

Help Mr. Rakib to reduce the absolute difference between the two boys' sum of assets by using the magic cards.

Input Format

The first line contains an integer T denoting the number of test cases. Then T testcases follow.

The first line of each testcase contains two integers n and m, where n denotes the total number of assets and m denotes the number of assets Ratul receives.

The second line contains n positive integers denoting the price of the assets.

The third line contains an integer p denoting the number of magic cards.

Then p lines follow, each containing a pair of integers (x, y) describing a magic card.

Constraints

$1 \leq T \leq 10$

$1 \leq m \leq n \leq 99999$

$1 \leq asset_i \leq 9999$

$1 \leq p \leq 45$

$0 \leq x, y \leq 9$

Output Format

For each test case print an integer, the minimum absolute difference after using the magic cards, on a separate line.

Sample Input 0

```
3

3 2
1 1 99
2
```

```
1 2
2 3

6 3
12 56 78 90 11 22
4
1 3
2 5
7 5
8 1

7 3
234 678 678 7655 5 231 78
6
2 6
7 0
5 9
6 8
2 4
7 1
```

Sample Output 0

```
96
0
17
```

Explanation 0

Please be aware that the sample input contains extra newlines between testcases only for reading convenience and the remaining dataset does not contain any extra newlines.

- 1^{st} testcase:
  - Change the 1st asset's price 1's only digit 1 with card (1, 2) to turn it to 2.
  - The absolute difference of their sum is now |(2 + 1) - 99| = 96.
  - Note that the card (1, 2) could only be used once on one of Ratul's assets.
  - Note that the card (2, 3) could not be used to modify the first asset after the first card, because you cannot use multiple cards on the same digit.
- 2^{nd} testcase:
  - If you change 3rd asset's price 78's first digit with card (7, 5), then new price will be 58.
  - Then change 6th asset's price 22's second digit with (2, 5), then new price will be 25.
  - Now sum of Ratul assets is 12 + 56 + 58 = 126 and Rahat's is 90 + 11 + 25 = 126.

```
10 }
11
```

Line: 1 Col: 1

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