Problem CORNFIELDS: Corn fields

The citizens of Roh, a small city in Arasia, recently discovered a number of magical artefacts while rebuilding their temple. They decided to use the artefacts in order to improve the fertility of their corn fields and asked a group of travelling mages for assistance. Every magician has his own kind of spell and may only use certain types of artefacts. Each spell requires one artefact in order to be cast. Moreover, every magician is only willing to cast at most a certain number of spells. The fertility of any field can benefit from at most a certain number of spells of the same kind, depending on its size. Additionally, one has to be careful not to cast too many spells onto a single field, as they might influence each other and produce unforeseen effects. Your task is to help the citizens of Roh to maximize the fertility of their fields by maximizing the number of spells cast.

Input

The first line of input contains a number T ($1 \leq T \leq 20$), the total number of test cases. The first line of each test case contains three integers n, m, f ($1 \leq n, m, f \leq 100$), where n denotes the number of types of artefacts, m denotes the number of mages and f denotes the number of fields. The second line of each test case contains n integers a_i ($1 \leq a_i \leq 1\,000\,000$), denoting the number of available artefacts of the different types. The next m lines describe the mages starting with two integers s and a ($1 \leq s \leq 1\,000\,000$; $1 \leq a \leq 20$), describe the number of spells the mage is willing to cast at most and the number of types of artefacts he can use, respectively. Then follow a additional integers n_i ($1 \leq n_i \leq n; n_i \neq n_j$), giving the ID of the artefact types that can be used.

Finally, f lines follow, each providing a description of a single field: The first two integers c and r in a line denote the maximum number of spells that can be cast on that field and the number of mages who can improve the fertility of the field, respectively ($1 \leq c \leq 1\,000\,000$; $1 \leq r \leq 20$). The rest of the line consists of r pairs of integers m_i and s_i, providing a description of how the fertility of the field can be improved by the mages. m_i denotes the ID of a mage who can improve the fertility of the field ($1 \leq m_i \leq m; m_i \neq m_j$) while s_i denotes the maximum number of spells of this mage which can improve the fertility of the field ($1 \leq s_i \leq 1\,000\,000$).

Adjacent test cases are separated by a blank line.

Output

Your program should output a single line per test case. The line should start with "`Case X: `" where `X` is replaced by the number of the test case. Then print a single integer representing the number of spells that can be cast.

The first case of the sample is trivial.

In the second case, mage 1 uses an artefact of type 1 to improve the fertility of field 1, mage 2 uses an artefact of type 2 to cast a spell on field 2, mage 3 uses an artefact of type 3 to cast a spell on field 3. The solution cannot exceed 3 although the total number of spells the mages are willing to cast is 4 in total; however, the first mage, who is willing to cast up to 2 spells, can only improve the fertility of field 1, which is possible at most once.

Sample Input 1

```
2
1 1 1
2
1 1 1
2 1 1 2

3 3 3
2 1 1
2 1 1
1 2 2 3
1 1 3
3 2 1 1 2 2
3 2 2 1 3 3
3 1 3 1
```

Sample Output 1

```
Case 1: 1
Case 2: 3
```