Internally Stable Sets

A weighted finite undirected graph is a triple *G = (V, E, w)* consisting of vertex set *V*, edge set $E \subseteq \{\{u, v\} : u, v \in V, u \neq v\}$, and vertex weighting function *w* such that $w(u) \geq 0, \forall u \in V$ and $w(K) = \sum_{u \in K} w(u), K \subseteq V$. For $u \in V$ and $K \subseteq V$, *N(u)* and *N(K)* will denote the neighboring vertex sets of *u* and *K* respectively, formally defined as:

$$N(u) = \{v : \{u, v\} \in E\}, N(K) = \bigcup_{u \in K} N(u)$$

A vertex set $K \subseteq V$ satisfying $N(K) \cap K = \varnothing$ is called *internally stable* (also known as independent or anti-clique). In this problem you must find an internally stable set *B* such that *w(B) = max{w(S)}*, where *S* belongs to the set of all internally stable sets of that graph.

Input

t – the number of test cases [*t* <= 100]
n k – [*n* – number of vertices (2 <= *n* <= 200), *k* – number of edges (1 <= *k* <= *n*(n-1)/2*)]
then *n* numbers follows (*wi* - the weight of *i*-th vertex) [0 <= *wi* <= 2^31-1]
then *k* pairs of numbers follows denoting the edge between the vertices (*si sj* edge between *i*-th and *j*-th verices) [1 <= *si, sj* <= *n*]

Output

For each test case output *MaxWeight* – the weight of a maximum internally stable set of the given graph. [0 <= *MaxWeight* <= 2^31-1]

Example

Input:

```
2
5 6
10 20 30 40 50
1 2
1 5
2 3
3 4
3 5
4 5

4 4
10 4 10 14
1 2
2 3
3 4
4 1
```

Output:

```
70
20
```