n farmer John cows are numbered sequentially from 1 to n. Milking cow i requires t_i units of time. However, some cows must be milked earlier than others (due to their position on the farm). If the A cow needs to be milked before the B cow, farmer John must completely finish milking the A cow before milking the B cow.

In order to milk all of his cows as quickly as possible, farmer John hired a large number of milkmaids – sufficient to milk any number of cows at a time. Determine the minimum amount of time required to milk all cows.

The first line of input contains n and m – the number of cows and the number of restrictions, respectively ($1 \leq n \leq 10\ 000$, $1 \leq m \leq 50\ 000$). The next n lines contain t_i times required to reach the cows ($1 \leq t_i \leq 100\ 000$). The following m lines contain the numbers a_i and b_i – milking restrictions ($1 \leq a_i, b_i \leq n$, $a_i \neq b_i$).

Print the minimum amount of time required to milk all the cows.

Sample input:

```
3 1
10
5
6
3 2
```

Sample output:

```
11
```