IIUPC 2012

Problem A: Brother & Sisters!

Taman is excited to announce that he has learnt bitwise **AND** operation. His Big Sister Titly has given him a sequence of non-negative integers $x_1, x_2 \ldots x_n$ as key. To test that whether Taman knows bitwise **AND** operation or not, Taman is asked to find maximum value among all (**a AND** x_i) where $1 \le i \le N$. But their youngest sister Tamanna is not happy with this. She adds another condition that for a given sequence, Taman has to answer **Q** queries instead of just one. Can you help poor Taman?

Note:
Expression ***x* AND *y*** means applying the operation of bitwise **AND** to numbers ***x*** and ***y***. This operation exists in all modern programming languages, for example, in language C++ and Java it is marked as "**&**".

Input

First line of input will contain the number of test cases, $T \le 5$. Then **T** test cases follow. First line of each test case contains two integers **N** ($1 \le N \le 10000$) and **Q** ($1 \le N \le 30000$) separated by a single space. Next line contains **N** integers $x_1, x_2 \ldots x_n$ separated by a single space ($0 \le x_i < 10^9$). Each of next **Q** lines describes a query which consists of a single integer **a** ($0 \le a < 230$).

Output

For each query output a single integer, the maximum value of (**a AND** x_i) where $1 \le i \le N$.

Sample Input	Output for Sample Input
1 3 3 1 2 3 10 11 12	2 3 0
Problem Setter: Muhammed Hedayet	
Alternate Solution: Kazi Rakibul Hossain	