TSOC '15 Contest 2 #5 - Bebiliths

Time limit: 0.6s   **Memory limit:** 100M

> Regroup! Regroup!

The caves have been completely traversed, and Mr. Benum has been located! However, the quest is not over. Swarms of **bebiliths**, or spider-monsters the size of elephants, are swiftly decimating the ex-convicts! It is up to Max to command the remaining ex-convicts so that they can exterminate the bebilith army. But first, Max has to ensure that the ex-convicts will stay alive!

There are N $(1 \leq N \leq 50\,000)$ bebiliths in pursuit of one of the groups of ex-convicts. Each bebilith has a speed B $(0 \leq B \leq 10^9)$, a venom-spitting distance D $(0 \leq D \leq 10^9)$ and a claw sharpness C $(0 \leq C \leq 10^9)$ (where the bebilith with the sharpest claw has the highest value of C). Meanwhile, the ex-convicts are running at a uniform speed S $(0 \leq S \leq 10^9)$.

If two bebiliths have the same speed and are faster or at pace with the ex-convicts, the bebilith with the sharpest claws is more dangerous. However, if two bebiliths have the same speed but are slower than the ex-convicts, the bebilith that spits venom the farthest is more dangerous. Otherwise, if two bebiliths have different speeds, the faster one is more dangerous. Max numbers each bebilith from 1 to N. If there is a tie between two bebiliths in terms of how dangerous they are, the one that is numbered the lowest is considered more dangerous. Help Max determine what number represents the ith most dangerous bebilith Q $(1 \leq Q \leq N)$ times!

Input Specification

First line: S

Second line: N

Next N lines: Three space-separated integers B_j D_j C_j on each line. Line j represents the characteristics of the $(j-2)^{\text{th}}$ bebilith.

Line $N+2$: Q

Next Q lines: A single integer i on each line, indicating that the ith most dangerous bebilith's number should be reported back to Max.

Output Specification

Q lines of the ith most dangerous bebilith's number as queried.

Sample Input

```
5
4
7 29 61
7 42 59
4 1 441221001
3 7 9996999
4
1
2
3
4
```

Sample Output

```
1
2
3
4
```

Explanation

Bebiliths 1 and 2 have the same speed, and both are the fastest. Their speed is greater than Max's speed. Bebilith 1 has sharper claws, so it is the most dangerous, while bebilith 2 is the 2nd most dangerous. Bebilith 3 is faster than bebilith 4, so they are the 3rd and 4th most dangerous, respectively.