Bit Soccer

IEEE Xtreme 12

Bit Soccer

Time limit: *1000 ms*
Memory limit: *256 MB*

Peredo is a computer scientist who loves soccer. His favorite soccer player is Paolo Guerrero, one of the best Peruvian players, and his favorite team is the Brazilian national team.

He has a very large database of players with videos, photos, and many statistics related to their performance in hundreds of games. He uses his database to compute a binary **performance index** that tracks the players' abilities across 40 possible game metrics.

The **performance index** represents all possible soccer abilities of each player with a 0 for a lack of ability in a given game metric and a 1 for perfect ability, with no fractions in between 0 and 1.

Based on these numbers, Peredo created a simulation game that takes the **performance indices** and combines multiple players to form a **team performance index**.

The **team performance index** is such that if a single player has a 1 in a given metric then the **team performance index** also has a 1 in that metric.

You are given a list of players in your **roster** represented by their **performance indices** in decimal format and your tasks is to combine a subset from your **roster** to form your **starting team** and to obtain a specific **team performance index**. There is no limit to the number of players that can form the **starting team**.

As an example, simplifying with just 4 game metrics, if we have two players on our **starting team** with **performance indices** 5 `(0101)` and 3 `(0011)` the resulting **team performance index** will be 7 `(0111)`.

N : Παίκτες με 40 binary attributes

Pi : Player Index   10001…   10010…   00111…   10000…

G : Team Index

```
     10001…
     10010…
     00111…
OR   10000…
-----------
     10111…
```

N : Παίκτες

Pi : Player Index   10001…   10010…   00111…   10000…

G : Team Index

~~10001…~~

~~10010…~~

00111…

OR 10000…

10111…

Δεν αλλάζει το αποτέλεσμα

N : Παίκτες

Pi : Player Index 10001… 10010… 00111… 10000…

Q : Queries

Υπάρχουν Pi1, Pi2, Pi3, … Pik ώστε:

$$
\begin{array}{rl}
 & Pi1 \\
 & Pi2 \\
 & Pi3 \\
 & \dots \\
\text{OR} & Pik \\
\hline
 & Qi
\end{array}
$$

OR

x	y	$x+y$
0	0	0
0	1	1
1	0	1
1	1	1

Pi1:
Pi2:
Pi3:
…
Pik:

?

Qi: 1 0 1 0 0 1 0 1 …

OR

x	y	$x+y$
0	0	0
0	1	1
1	0	1
1	1	1

Pi1: x 0 x 0 0 x 0 x …
Pi2: x 0 x 0 0 x 0 x …
Pi3: x 0 x 0 0 x 0 x …
…
Pik: x 0 x 0 0 x 0 x …

Qi: 1 0 1 0 0 1 0 1 …

OR

x	y	$x+y$
0	0	0
0	1	1
1	0	1
1	1	1

Pi1: x 0 x 0 0 x 0 x …
Pi2: x 0 x 0 0 x 0 x …
Pi3: x 0 x 0 0 x 0 x …
…
Pik: x 0 x 0 0 x 0 x …

Qi: 1 0 1 0 0 1 0 1 …

OR

x	y	$x+y$
0	0	0
0	1	1
1	0	1
1	1	1

Pi1: x 0 x 0 0 x 0 x …

Pi2: x 0 x 0 0 x 0 x …

Pi3: x 0 x 0 1 x 0 x …

…

Pik: x 0 x 0 0 x 0 x …

---

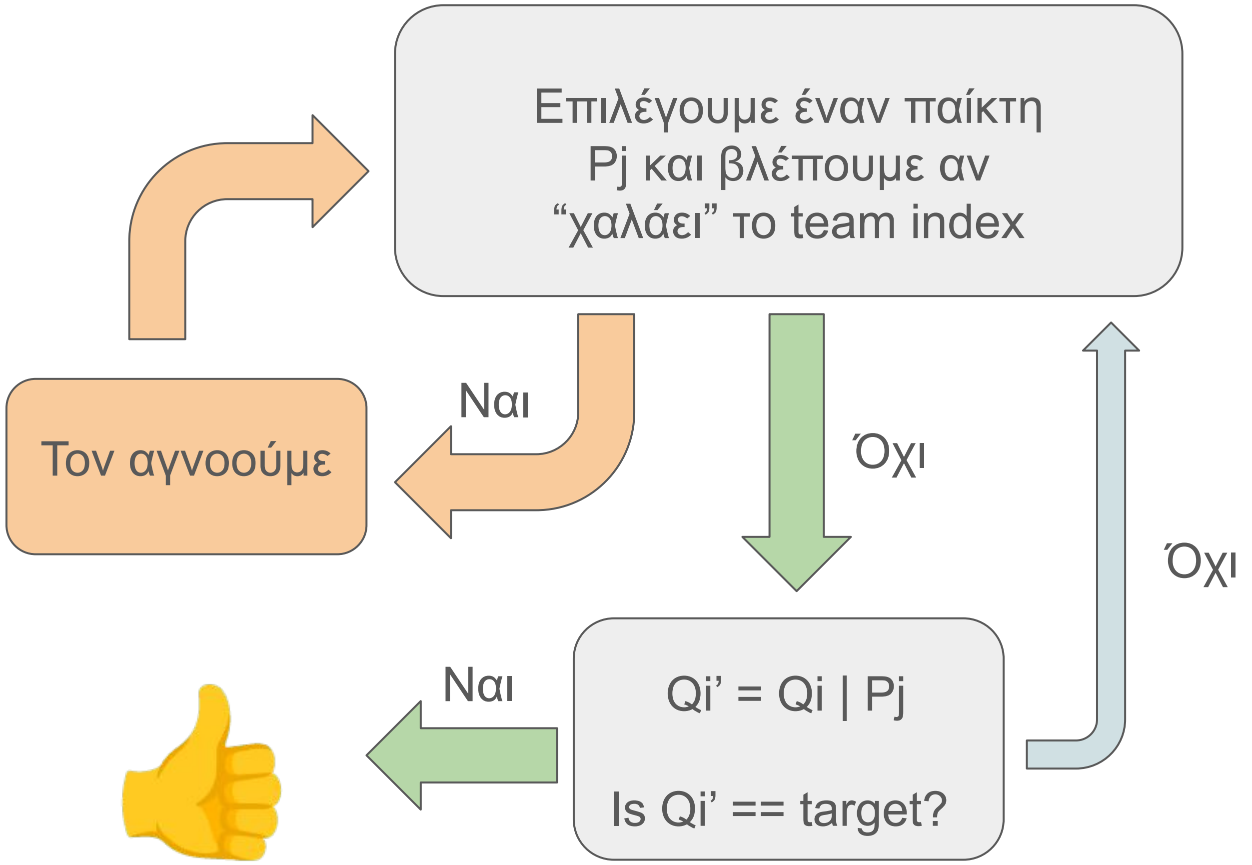
1 0 1 0 1 1 0 1 …

Qi: 1 0 1 0 0 1 0 1 …

Qi:	1 0 1 0 0 1 0 1 …
not Qi:	0 1 0 1 1 0 1 0 …

Pi:	x 0 x 0 0 x 0 x …
Pi and (not Qi):	0 0 0 0 0 0 0 0 …

Pj:	x 0 x 0 1 x 0 x …
Pj and (not Qi):	0 0 0 0 1 0 0 0 …


Επιλέγουμε έναν παίκτη
Pj και βλέπουμε αν
“χαλάει” το team index
Ναι
Τον αγνοούμε
Όχι
Όχι
Qi’ = Qi | Pj
Is Qi’ == target?
Ναι