C. Anya and 1100
Zadanie z Codeforces / Div. 2 / C

Zadanie pochodzi z platformy Codeforces:
https://codeforces.com/contest/2036/problem/C

C. Anya and 1100

time limit per test: 3 seconds
memory limit per test: 256 megabytes

While rummaging through things in a distant drawer, Anya found a beautiful string s consistin only of zeros and ones.

Now she wants to make it even more beautiful by performing q operations on it.

Each operation is described by two integers i ($1 \le i \le |s|$) and v ($v \in \{0, 1\}$) and means that the i-th character of the string is assigned the value v (that is, the assignment $s_i = v$ is performed).

But Anya loves the number 1100, so after each query, she asks you to tell her whether the substring "1100" is present in her string (i.e. there exist such $1 \le i \le |s| - 3$ that $s_i s_{i+1} s_{i+2} s_{i+3} = 1100$).

Input

The first line contains one integer t ($1 \le t \le 10^4$) — the number of test cases.

The first line of the test case contains the string s ($1 \le |s| \le 2 \cdot 10^5$), consisting only of the characters "0" and "1". Here $|s|$ denotes the length of the string s.

The next line contains an integer q ($1 \le q \le 2 \cdot 10^5$) — the number of queries.

The following q lines contain two integers i ($1 \le i \le |s|$) and v ($v \in \{0, 1\}$), describing the query.

It is guaranteed that the sum of $|s|$ across all test cases does not exceed $2 \cdot 10^5$. It is also guaranteed that the sum of q across all test cases does not exceed $2 \cdot 10^5$.

Output

For each query, output "YES", if "1100" is present in Anya's string; otherwise, output "NO".

You can output the answer in any case (upper or lower). For example, the strings "yEs", "yes", "Yes", and "YES" will be recognized as positive responses.

Example

Input

```
4
100
4
1 1
2 0
2 0
3 1
1100000
3
6 1
7 1
4 1
111010
4
1 1
5 0
4 1
5 0
0100
4
3 1
1 1
2 0
2 1
```

Output

NO
NO
NO
NO
YES
YES
NO
NO
YES
YES
YES
NO
NO
NO
NO