C. Nephren gives a riddle

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

What are you doing at the end of the world? Are you busy? Will you save us?

Nephren is playing a game with little leprechauns.

She gives them an infinite array of strings, $f_{0\ldots\infty}$.

f_0 is "`What are you doing at the end of the world? Are you busy? Will you save us?`".

She wants to let more people know about it, so she defines $f_i =$ "`What are you doing while sending "`f_{i-1}"`? Are you busy? Will you send "`f_{i-1}"`?`" for all $i \geq 1$.

For example, f_1 is

"`What are you doing while sending "What are you doing at the end of the world? Are you busy? Will you save us?"? Are you busy? Will you send "What are you doing at the end of the world? Are you busy? Will you save us?"?`". Note that the quotes in the very beginning and in the very end are for clarity and are not a part of f_1.

It can be seen that the characters in f_i are letters, question marks, (possibly) quotation marks and spaces.

Nephren will ask the little leprechauns q times. Each time she will let them find the k-th character of f_n. The characters are indexed starting from 1. If f_n consists of less than k characters, output '`.`' (without quotes).

Can you answer her queries?

Input

The first line contains one integer q ($1 \leq q \leq 10$) — the number of Nephren's questions.

Each of the next q lines describes Nephren's question and contains two integers n and k ($0 \leq n \leq 10^5$, $1 \leq k \leq 10^{18}$).

Output

One line containing q characters. The i-th character in it should be the answer for the i-th query.

Examples

input
3 1 1 1 2 1 111111111111
output
Wh.

input
5 0 69 1 194 1 139

```
0 47
1 66
```

output

```
abdef
```

input

```
10
4 1825
3 75
3 530
4 1829
4 1651
3 187
4 584
4 255
4 774
2 474
```

output

```
Areyoubusy
```

Note

For the first two examples, refer to f_0 and f_1 given in the legend.