B. A BIT of a Construction

time limit per test: 2 seconds
memory limit per test: 256 megabytes

Given integers n and k, construct a sequence of n non-negative (i.e. ≥ 0) integers $a_1, a_2, \ldots, a_n$ such that

1. $\sum_{i=1}^{n} a_i = k$
2. The **number** of 1s in the binary representation of $a_1 | a_2 | \ldots | a_n$ is maximized, where $|$ denotes the bitwise OR operation.

Input

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

The only line of each test case contains two integers n and k ($1 \leq n \leq 2 \cdot 10^5$, $1 \leq k \leq 10^9$) — the number of non-negative integers to be printed and the sum respectively.

It is guaranteed that the sum of n over all test cases does not exceed $2 \cdot 10^5$.

Output

For each test case, output a sequence $a_1, a_2, \ldots, a_n$ on a new line that satisfies the conditions given above.

If there are multiple solutions, print any of them.

Example

input Copy

```
4
1 5
2 3
2 5
6 51
```

output Copy

```
5
1 2
5 0
3 1 1 32 2 12
```

Note

In the first test case, we have to print exactly one integer, hence we can only output 5 as the answer.

In the second test case, we output $1, 2$ which sum up to 3, and $1|2 = (11)_2$ has two 1s in its binary representation, which is the maximum we can achieve in these constraints.

In the fourth test case, we output $3, 1, 1, 32, 2, 12$ which sum up to 51, and $3|1|1|32|2|12 = (101\,111)_2$ has five 1s in its binary representation, which is the maximum we can achieve in these constraints.