There is an array $A_1,\ldots,A_N$, and initially $A_i=i$ for all i.

Define the following routine shuffle(L,R):

If R=L+1, swap values of A_L and A_R and terminate.

Otherwise, run shuffle(L,R−1) followed by shuffle(L+1,R). Suppose we run shuffle(1,N).

Print the value of A_K after the routine finishes.

For each input file, solve T test cases.

Input Format

- T
- Case1
- Case2
- ⋮
- CaseT
- Each Case will be given as:
- N K

Constraints

- 1<=T<=1000
- 2<=N<=10^{18}
- 1<=K<=N

Output Format

- for T times

Sample Input 0

```
7
2 1
2 2
5 1
5 2
5 3
5 4
5 5
```

Sample Output 0

```
2
1
2
4
```

```
1
5
3
```

Explanation 0

For N=2, we do the following and get A=(2,1) .

- Run shuffle(1,2), and swap A_1 and A_2.

For N=5, we do the following and get A=(2,4,1,5,3).

- Run suffle(1,5):
  - Run shuffle(1,4):
    - Run shuffle(1,3):
      - ⋮
    - Run shuffle(2,4):
      - ⋮
  - Run shuffle(2,5):
    - Run shuffle(2,4):
      - ⋮
    - Run shuffle(3,5):
      - ⋮