



Kitty and Katty

by [forthright48](#)

Problem

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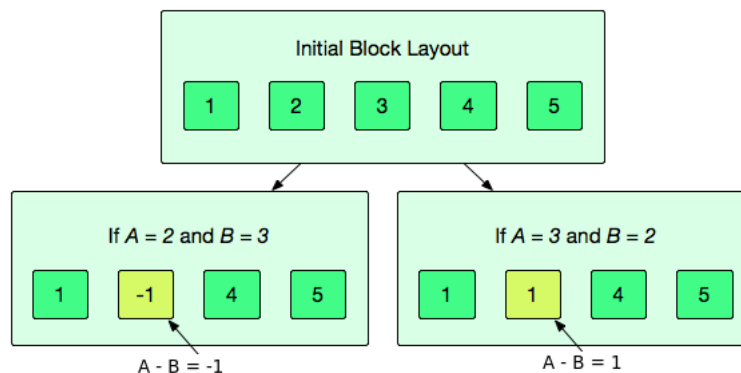
Kitty and Katty have N plastic blocks. They label the blocks with sequential numbers from 1 to N and begin playing a game in turns, with Kitty always taking the first turn. The game's rules are as follows:

- For each turn, the player removes 2 blocks, A and B , from the set. They calculate $A - B$, write the result on a new block, and insert the new block into the set.
- The game ends when only 1 block is left. The winner is determined by the value written on the final block, X :
 - If $X \% 3 = 1$, then Kitty wins.
 - If $X \% 3 = 2$, then Katty wins.
 - If $X \% 3 = 0$, then the player who moved last wins.

Recall that $\%$ is the [Modulo Operation](#).

Given the value of N , can you find and print the name of the winner? Assume that both play optimally.

Note: The selection order for A and B matters, as sometimes $A - B \neq B - A$. The diagram below shows an initial set of blocks where $N = 5$. If $A = 2$ and $B = 3$, then the newly inserted block is labeled -1 ; alternatively, if $A = 3$ and $B = 2$, the newly inserted block is labeled 1 .



Input Format

The first line contains a single positive integer, T (the number of test cases or games).
 The T subsequent lines each contain an integer, N (the number of blocks for that test case).

Constraints

- $1 \leq T \leq 100$
- $1 \leq N \leq 10^5$

Output Format

For each test case, print the name of the winner (i.e.: either **Kitty** or **Katty**) on a new line.

Sample Input

2
2
3

Sample Output

Kitty
Katty

Explanation

Test Case 0:

$N = 2$ so there are two blocks labeled **1** and **2**. Kitty chooses $A = 2$ and $B = 1$, then inserts a new block with the label **1** (the result of $2 - 1$). The game ends, as there is now only **1** block in the set. The label on the last block, X , is **1**, so we calculate $result = 1 \% 3 = 1$. Because $result = 1$, Kitty wins and we print **Kitty** on a new line.

Test Case 1:

$N = 3$, so there are three blocks labeled **1**, **2**, and **3**. No matter how Kitty makes the first move, Katty will win. If Kitty chooses $A = 3$ and $B = 2$ on the first move and inserts a block labeled **1** (the result of $3 - 2$), the set of blocks becomes **{1, 1}**. Katty then must choose $A = 1$ and $B = 1$ and insert a new block labeled **0** (the result of $1 - 1$). The game ends, as there is now only **1** block in the set. The label on the last block, X , is **0**, so we calculate $result = 0 \% 3 = 0$. Because $result = 0$ and Katty made the last move, Katty wins and we print **Katty** on a new line.

f t in

Submissions: [596](#)

Max Score: 80

Difficulty: Medium

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☆☆☆☆☆

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Current Buffer (saved locally, editable)
Java 7

```

1 import java.io.*;
2 import java.util.*;
3 import java.text.*;
4 import java.math.*;
5 import java.util.regex.*;
6
7 public class Solution {
8
9     public static void main(String[] args) {
10         Scanner in = new Scanner(System.in);
11         int T = in.nextInt();
12         for(int a0 = 0; a0 < T; a0++){
13             int n = in.nextInt();
14         }
15     }
16 }
17

```

Line: 1 Col: 1

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