

GG and YY's Game

Input file: **standard input**
Output file: **standard output**
Time limit: 3 seconds
Memory limit: 256 megabytes

Two strategic players, GG and YY, are about to engage in a competitive game. The game takes place on an undirected graph, denoted as G . The graph is characterized by a parameter t ($t \geq 1$) and comprises n disjoint chains.

The rules of the game are as follows:

- GG and YY take turns to make a move on graph G , with GG always going first.
- During each turn, the player chooses one node, denoted as s , from the graph. Upon this selection, the player captures all nodes on the same chain as s that are at a distance of at most t from s , including s itself.
- Once a node is captured, it is eliminated from the graph, potentially causing the chain to break apart.
- The game proceeds until all vertices are captured, at which point the game concludes.

Both GG and YY aim to capture the maximum number of nodes. Let cnt_{GG} and cnt_{YY} represent the number of nodes captured by GG and YY, respectively. Assuming both players, GG and YY, employ their optimal strategies, your task is to determine:

- When $t = 1$, what is the value of $\text{cnt}_{\text{GG}} - \text{cnt}_{\text{YY}}$?
- When $t > 1$, which player wins the game?

Input

The first line contains one integer T ($1 \leq T \leq 100$), indicating the number of test cases.

The first line of each test case contains two integers n and t ($1 \leq n \leq 10^4, 1 \leq t \leq 10^{18}$), indicating the number of chains and the parameter.

The second line of each test contains n integers l_1, l_2, \dots, l_n , where each l_i ($1 \leq l_i \leq 10^{18}$) indicates that a distinct chain of length l_i exists in G .

Output

For each test, output the answer in a single line.

- When $t = 1$, output $\text{cnt}_{\text{GG}} - \text{cnt}_{\text{YY}}$.
- When $t > 1$, output **GG** if GG wins, or output **YY** if YY wins, or output **TIE** if the game results in a tie.

Example

standard input	standard output
2	2
2 1	GG
1 5	
2 2	
1 5	