Maximum Subarray Sum

We define the following:

- A *subarray* of array a of length n is a contiguous segment from $a[i]$ through $a[j]$ where $0 \leq i \leq j < n$.
- The *sum* of an array is the sum of its elements.

Given an n-element array of integers, a, and an integer, m, determine the maximum value of the sum of any of its subarrays modulo m. For example, Assume $a = [1, 2, 3]$ and $m = 2$. The following table lists all subarrays and their modulus:

```
  sum %2
[1]  1 1
[2]  2 0
[3]  3 1
[1,2]  3 1
[2,3]  5 1
[1,2,3]  6 0
```

The maximum modulus is 1.

Function Description

Complete the *maximumSum* function in the editor below. It should return a long integer representing the maximum value of $subarray\ sum\ \%\ m$.

maximumSum has the following parameter(s):

- *a*: an array of long integers, the array to analyze
- *m*: a long integer, the modulo divisor

Input Format

The first line contains an integer q, the number of queries to perform.

The next q pairs of lines are as follows:

- The first line contains two space-separated integers n and (long)m, the length of a and the modulo divisor.
- The second line contains n space-separated long integers $a[i]$.

Constraints

- $2 \leq n \leq 10^5$
- $1 \leq m \leq 10^{14}$
- $1 \leq a[i] \leq 10^{18}$
- $2 \leq$ the sum of n over all test cases $\leq 5 \times 10^5$

Output Format

For each query, return the maximum value of $subarray\ sum\ \%\ m$ as a long integer.

Sample Input

```
1
5 7
3 3 9 9 5
```

Sample Output

```
6
```

Explanation

The subarrays of array $a = [3, 3, 9, 9, 5]$ and their respective sums modulo $m = 7$ are ranked in order of length and sum in the following list:

1. $[9] \Rightarrow 9 \% 7 = 2$ and $[9] \rightarrow 9 \% 7 = 2$
   $[3] \Rightarrow 3 \% 7 = 3$ and $[3] \rightarrow 3 \% 7 = 3$
   $[5] \Rightarrow 5 \% 7 = 5$
2. $[9, 5] \Rightarrow 14 \% 7 = 0$
   $[9, 9] \Rightarrow 18 \% 7 = 4$
   $[3, 9] \Rightarrow 12 \% 7 = 5$
   $[3, 3] \Rightarrow 6 \% 7 = 6$
3. $[3, 9, 9] \Rightarrow 21 \% 7 = 0$
   $[3, 3, 9] \Rightarrow 15 \% 7 = 1$
   $[9, 9, 5] \Rightarrow 23 \% 7 = 2$
4. $[3, 3, 9, 9] \Rightarrow 24 \% 7 = 3$
   $[3, 9, 9, 5] \Rightarrow 26 \% 7 = 5$
5. $[3, 3, 9, 9, 5] \Rightarrow 29 \% 7 = 1$

The maximum value for $subarray\ sum \% 7$ for any subarray is 6.