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Maximum Subarray Sum 🛊

Problem Submissions Leaderboard Editorial riangle Topics

We define the following:

- A subarray of array a of length n is a contiguous segment from a[i] through a[j] where $0 \le i \le j < n$.
- 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 moduli:

sum	%2
1	1
2	0
3	1
3	1
5	1
6	Θ
	1 2 3 3 5

The maximum modulus is ${f 1}$.

Function Description

Complete the maximumSum function in the editor below. It should return a long integer that represents 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 $m{q}$, the number of queries to perform.

The next $m{q}$ pairs of lines are as follows:

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

Constraints

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

Output Format

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

Sample Input

1 5 7 3 3 9 9 5



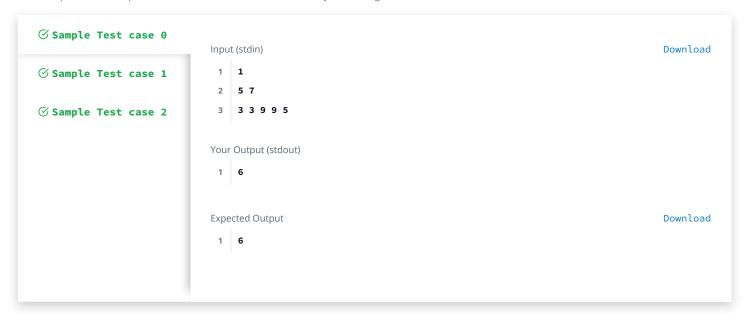
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Sample Output
   6
Explanation
The subarrays of array a=[3,3,9,9,5] and their respective sums modulo m=7 are ranked in order of length and sum in the following list:
1. [9] \Rightarrow 9 \% 7 = 2 and [9] \rightarrow 9 \% 7 = 2
   [3] \Rightarrow 3 \% 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 \it subarray \it sum~\%~7 for any subarray is \it 6.
```

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JavaScript (Node.js)
                                                                                                                                                                                                                                                                                                                                                               Change Theme

▼ <a>1</a>
<a>5</a>
<a>6</a>
<a>7</a>
<a>7
         48
                                                                                                                       } else {
         49
                                                                                                                                           this.right = new TNode(v)
         50
                                                                                                                                           return preV
         51
                                                                                                                       }
         52
                                                                                              } else if(v==this.val){
                                                                                                                  if (this.right) { preV=this.right.val }
         53
         54
                                                                                                                  return preV;
         55
                                                                                              } else {
         56
                                                                                                                       preV = this.val
         57
                                                                                                                       if (this.left) {
         58
                                                                                                                                           return this.left.insert(v, preV)
         59
         60
                                                                                                                                           this.left = new TNode(v)
         61
                                                                                                                                           return preV
         62
                                                                                                                      }
         63
                                                                                            }
         64
                                                                          }
         65
         66
                                                      let tree = new TNode(pa[0])
         67
         68
         69
                                                      for (let i=1; i<pa.length; i++){
         70
                                                                          let nearV = tree.insert(pa[i], pa[i])
                                                                          // console.log(pa[i], nearV)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Line: 77 Col: 15
                                                                                             ☐ Test against custom input
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<u>Upload Code as File</u>
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You have passed the sample test cases. Click the submit button to run your code against all the test cases.



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