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ProblemStatement1:

GivenanarrayAofsortedintegersandanothernonnegativeintegerk,findif there exists2indicesiandjsuchthatA[i]-A[j]=k,i!=j.

InputFormat

- 1. FirstlineisnumberoftestcasesT.FollowingTlinescontain:
- 2. N,followedbyNintegersofthearray
- 3. Thenon-negativeintegerk

Outputformat

Print1ifsuchapairexistsand0ifitdoesn't.

SampleInput:

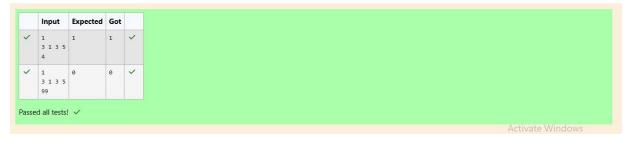
1

3135

4

SampleOutput:

1



ProblemStatement2:

Sam loves chocolates and starts buying the month e1 std ay of the year. Each day of the

year,x,isnumberedfrom1toY.Ondayswhenxisodd,Samwillbuyx chocolates;on dayswhenxiseven,Samwillnotpurchaseanychocolates.

 $Complete the code in the editors othat for each day Ni (where 1 \leq x \leq N \leq Y) \ in array arr, the number of chocolates Sampurchased (during days 1 through N) is printed on a$

newline. This is a function-only challenge, so input is handled for you by the locked stub

codeintheeditor.

InputFormat

Theprogramtakesanarrayofintegersasaparameter.

The locked code in the editor handles reading the following input from stdin, assembling

itintoanarrayofintegers(arr), and calling calculate(arr).

Thefirstlineofinputcontainsaninteger, T(thenumberoftestcases). Each line iof

the Tsubsequent lines describes the ith test case as an integer, Ni (the number of days).

Constraints

1≤T≤2×105

1≤N≤2×106

 $1 \le x \le N \le Y$

OutputFormat

Foreachtestcase, Tiinarr, your calculatemethod should print the total number of chocolates Sampurchased by day Nionanew line.

SampleInput0

3

1

2

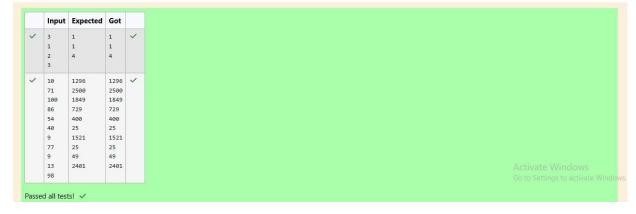
3

SampleOutput0

1

1

4



ProblemStatement3:

Thenumberofgoalsachievedbytwofootballteamsinmatchesinaleagueis giveninthe

formoftwolists.Consider:

- FootballteamA,hasplayedthreematches,andhasscored{1,2,3}goals ineachmatch respectively.
- FootballteamB,hasplayedtwomatches,andhasscored{2,4}goalsin eachmatch respectively.
- Yourtaskistocompute, for each match of team B, the total number of matches of team A,
- whereteamAhasscoredlessthanorequaltothenumberofgoalsscored by team B in thatmatch.

Intheabovecase:

- For2goalsscoredbyteamBinitsfirstmatch,teamAhas2matcheswith scores 1 and 2.
- For4goalsscoredbyteamBinitssecondmatch,teamAhas3matches with scores 1, 2

and 3. Hence, the answer: {2,3}.

Complete the code in the editor below. The programmust return an array of mpositive

integers, one for each maxes [i] representing the total number of elements nums [j]

satisfyingnums[j] \leq maxes[i]where0 \leq j<nand0 \leq i<m,inthegivenorder. It has the following:

nums[nums[0],...nums[n-1]]:firstarrayofpositiveintegers maxes[maxes[0],...maxes[n-1]]:secondarrayofpositiveintegers Constraints:

 $2 \le n, m \le 105, 1 \le nums[j] \le 109, where 0 \le j < n, 1 \le maxes[i] \le 109, where 0 \le j < m.$

InputFormatForCustomTesting

Inputfromstdinwillbeprocessedasfollowsandpassedtothefunction.

Thefirstlinecontainsanintegern, the number of elements in nums.

 $The next n line search contain an integer describing nums \cite{thm:properties} where 0 \le j < n.$

Thenextlinecontainsanintegerm, the number of elements in maxes.

 $The next mline sea ch contain an integer describing maxes \hbox{$[i]$} where 0 \le i < m.$

SampleInput

4

1

4

2

4

2

3

5

SampleOutput

ut Expected	Got	
2	2 4	
4	4	
1		,
0	9	9
3 4		3 4