Farmer John has built a new long barn, with N ( $2 \le N \le 100,000$ ) stalls. The stalls are located along a straight line at positions x1 ... xN ( $0 \le xi \le 1,000,000,000$ ).

His C ( $2 \le C \le N$ ) cows don't like this barn layout and become aggressive towards each other once put into a stall. To prevent the cows from hurting each other, FJ wants to assign the cows to the stalls, such that the minimum distance between any two of them is as large as possible. What is the largest minimum distance?

## Input

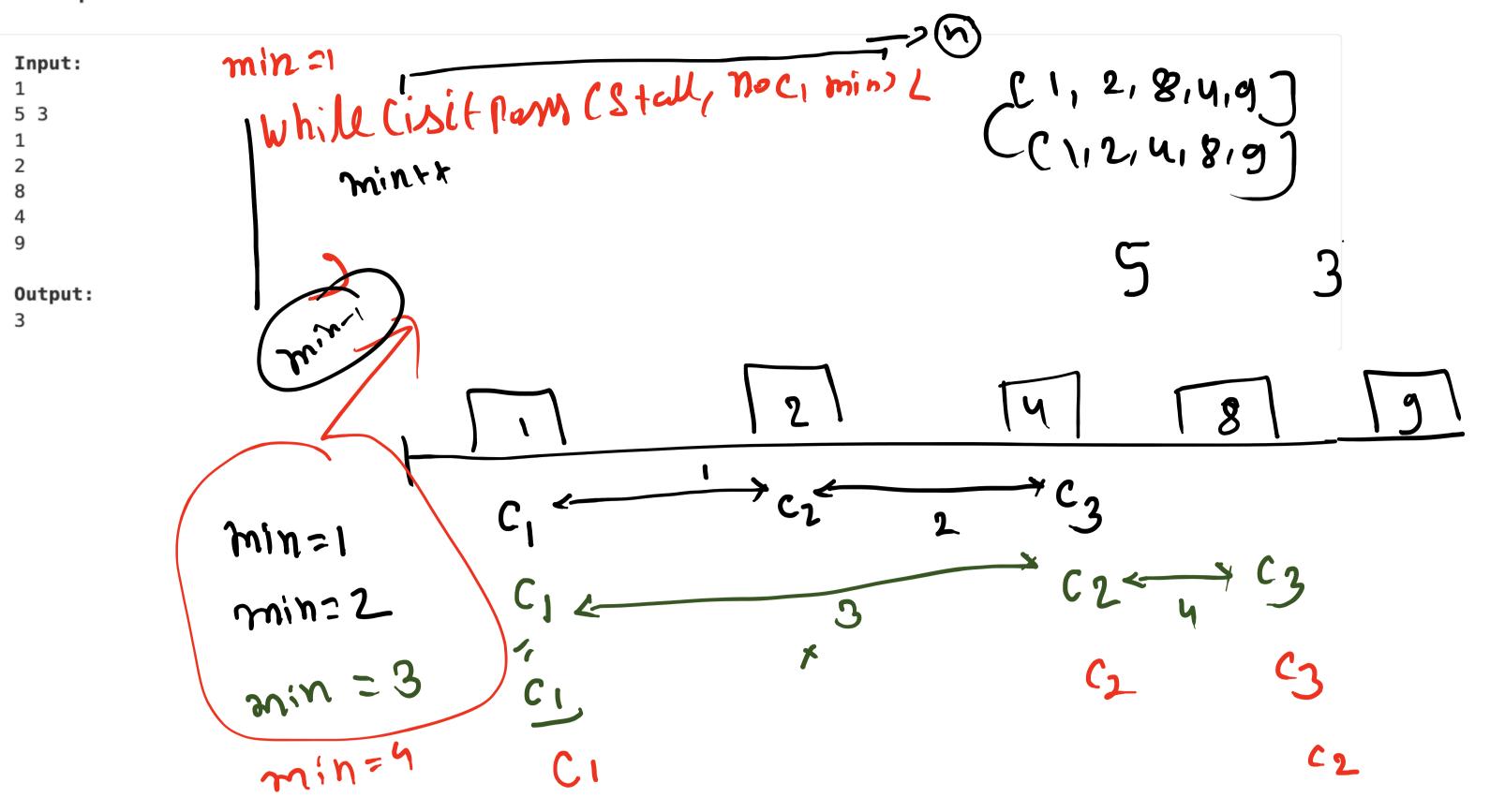
- *t* the number of test cases, then *t* test cases follows.
  - Line 1: Two space-separated integers: N and C
- Lines 2..N+1: Line i+1 contains an integer stall location, xi

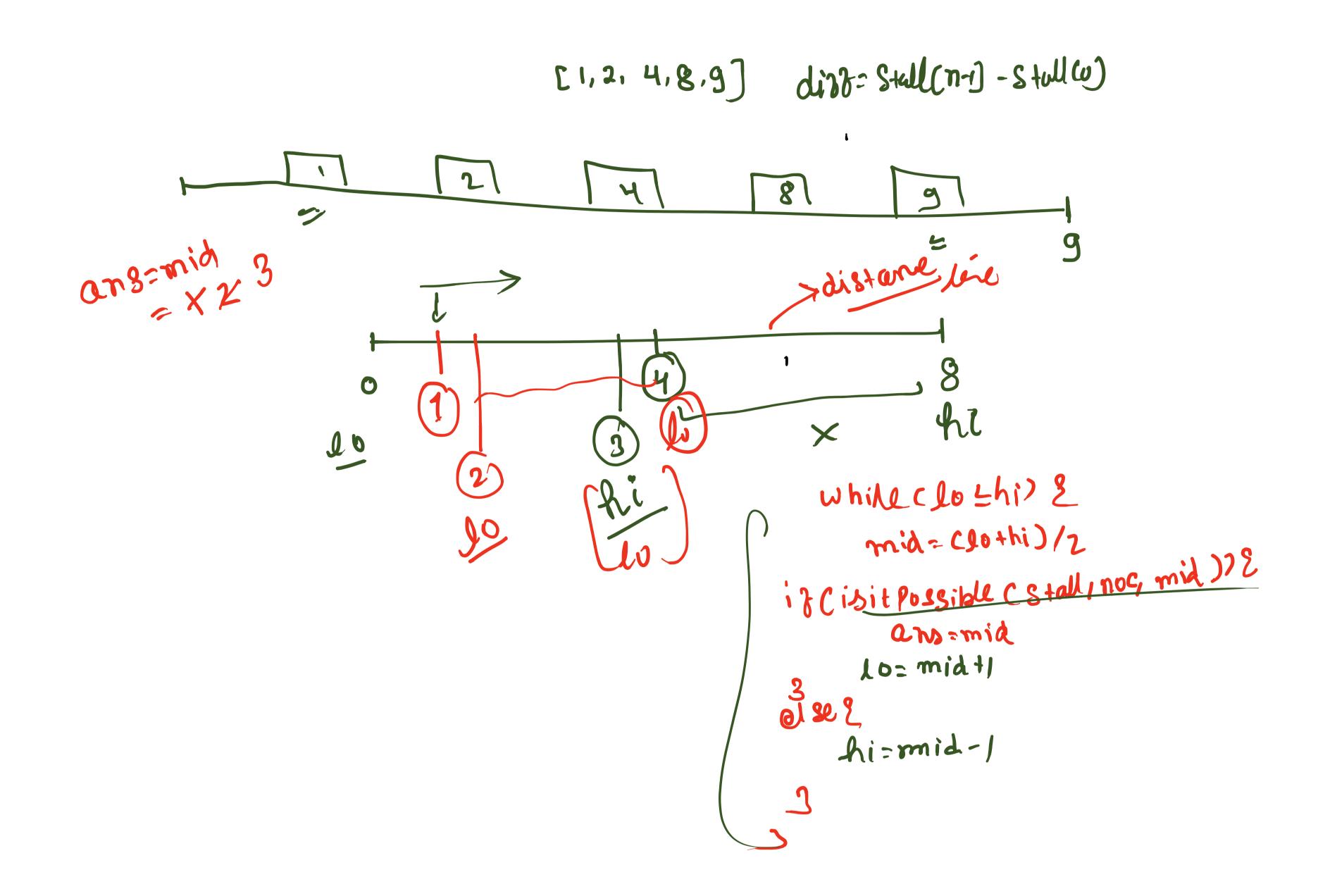
### Output

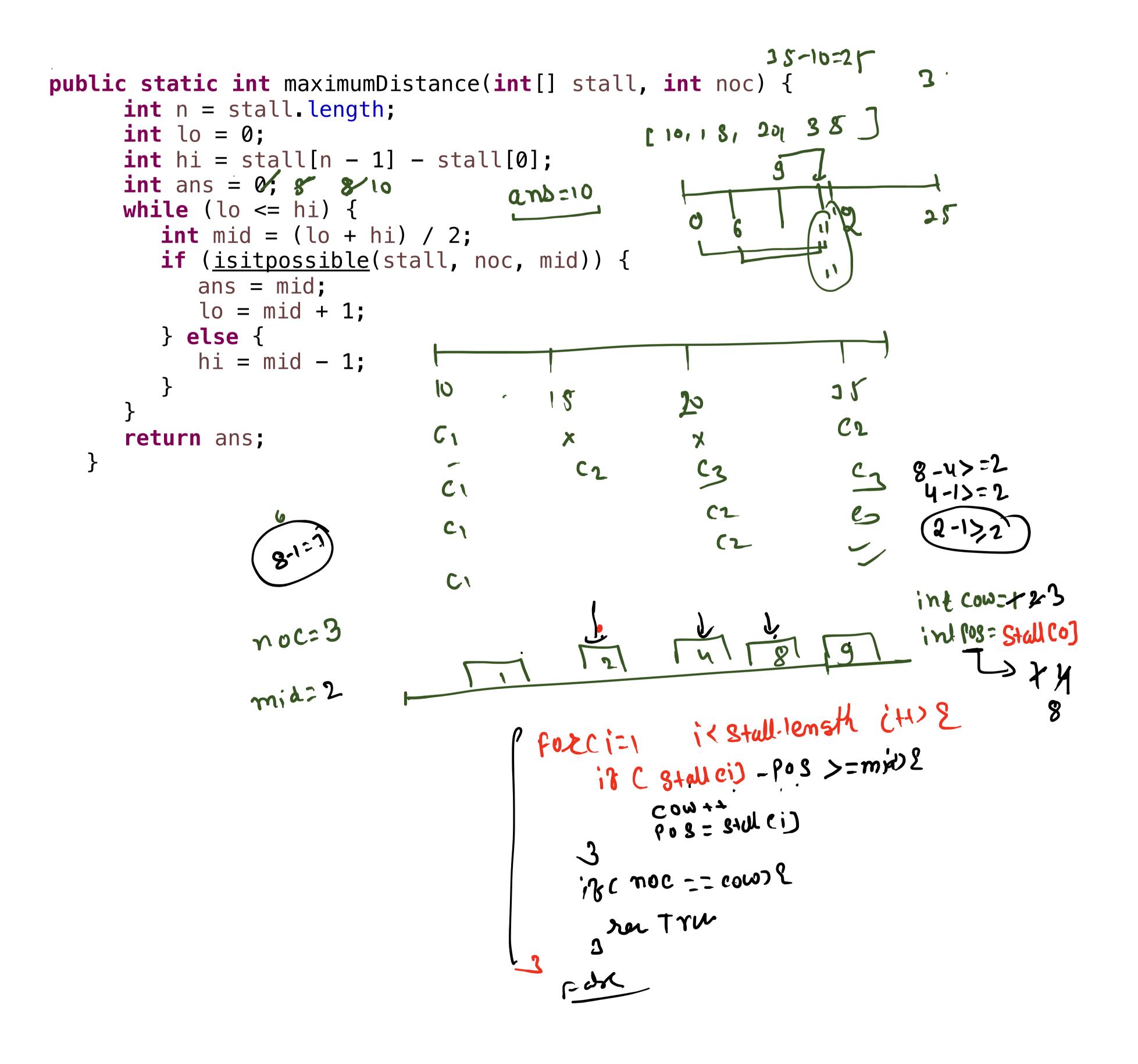
For each test case output one integer: the largest minimum distance.

## Example

5 3







# **Book Allocation Problem**

You are given number of pages in n different books and m students. The books are arranged in ascending order of number of pages. Every student is assigned to read some consecutive books. The task is to assign books in such a way that the maximum number of pages assigned to a student is minimum. 16 28 38 MO

# Input format

First line contains integer t as number of test cases. Next t lines contains two lines. For each test case, 1st line contains two integers n and m which represents the number of books and students and 2nd line contains n space separated integers which represents the number of pages of n books in ascending order.

