Aggressive Cows Code:

#include <iostream>

#include <algorithm>

using namespace std;

int N, C;

long long A[100000];

// check if a distance of x is possible between each cow

bool chk(int x)

{

// greedy approach, put each cow in the first place

int cows\_placed = 1, last\_pos = A[0];

for (int i = 1; i < N; i++)

{

if ((A[i] - last\_pos) >= x)

{

if (++cows\_placed == C)

return true;

last\_pos = A[i];

}

}

return false;

}

void solve()

{

cin >> N >> C;

for (int i = 0; i < N; i++)

cin >> A[i];

// sort our array

sort(A, A + N);

// binary search

long long low = 0, high = 1000000000, mid, pos = 0;

while (high >= low)

{

mid = (high + low) / 2;

if (chk(mid))

{

low = mid + 1;

pos = mid;

}

else

{

high = mid - 1;

}

}

cout << pos << endl;

}

int main()

{

int T;

cin >> T;

while (T--)

solve();

return 0;

}

Time Complexity:

Time complexity of Binary Search Tree is O(nlogn).