

USA Computing Olympiad

OVERVIEW

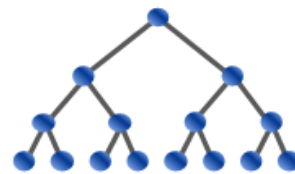
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USACO 2016 JANUARY CONTEST, BRONZE PROBLEM 2. ANGRY COWS

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Contest has ended.

Analysis mode

English (en) ▼

Bessie the cow has designed what she thinks will be the next big hit video game: "Angry Cows". The premise, which she believes is completely original, is that the player shoots a cow with a slingshot into a one-dimensional scene consisting of a set of hay bales located at various points on a number line; the cow lands on a hay bale with sufficient force to cause the bale to explode, which in turn might set off a chain reaction that causes additional nearby hay bales to explode. The goal is to use a single cow to start a chain reaction that detonates as many hay bales as possible.

There are N hay bales located at distinct integer positions x_1, x_2, \dots, x_N on the number line. If a cow is launched onto a hay bale at position x , this hay bale explodes with a "blast radius" of 1, meaning that any other hay bales within 1 unit of distance are also engulfed by the explosion. These neighboring bales then themselves explode (all simultaneously), each with a blast radius of 2, so these explosions may engulf additional yet-unexploded bales up to 2 units of distance away. In the next time step, these bales also explode (all simultaneously) with blast radius 3. In general, at time t a set of hay bales will explode, each with blast radius t . Bales engulfed by these explosions will themselves explode at time $t + 1$ with blast radius $t + 1$, and so on.

Please determine the maximum number of hay bales that can explode if a single cow is launched onto the best possible hay bale to start a chain reaction.

INPUT FORMAT (file angry.in):

The first line of input contains N ($1 \leq N \leq 100$). The remaining N lines all contain integers $x_1 \dots x_N$ (each in the range $0 \dots 1,000,000,000$).

OUTPUT FORMAT (file angry.out):

Please output the maximum number of hay bales that a single cow can cause to explode.

SAMPLE INPUT:

```
6
8
5
6
13
3
4
```

SAMPLE OUTPUT:

```
5
```

In this example, launching a cow onto the hay bale at position 5 will cause the bales at positions 4 and 6 to explode, each with blast radius 2. These explosions in turn cause the bales at positions 3 and 8 to explode, each with blast radius 3. However, these final explosions are not strong enough to reach the bale at position 13.

Problem credits: Brian Dean

Language:

C ▼

Source File:

 No file chosen

Note: Many issues (e.g., uninitialized variables, out-of-bounds memory access) can cause a program to produce different output when run multiple times; if your program behaves in a manner inconsistent with the official contest results, you should probably look for one of

these issues. Timing can also differ slightly from run to run, so it is possible for a program timing out in the official results to occasionally run just under the time limit in analysis mode, and vice versa. Note also that we have recently changed grading servers, and since our new servers run at different speeds from the servers used during older contests, timing results for older contest problems may be slightly off until we manage to re-calibrate everything properly.
