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Maximise Function

Problem Code: MAXFUN

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Davs Min

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Read problem statements in Hindi

(https://www.codechef.com/download/translated/FEB21/hindi/MAXFUN.pdf),

Bengali

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Mandarin Chinese

My Submissions All Submissions (https://www.codechef.com/download/translated/FEB21/mandarin/MAXFUN,sy/fdEB2d47status/MAXFUN,sy/

Russian

(https://www.codechef.com/download/translated/FEB21/russian/MAXFUN.pdf).

and Vietnamese

(https://www.codechef.com/download/translated/FEB21/vietnamese/MAXFUN.pdf) as well.

You are given a sequence A_1, A_2, \ldots, A_N . Find the maximum value of the expression $|A_x-A_y|+|A_y-A_z|+|A_z-A_x|$ over all triples of pairwise distinct valid indices (x, y, z).

Input

- ullet The first line of the input contains a single integer T denoting the number of test cases. The description of T test cases follows:
- The first line of each test case contains a single integer N.
- The second line contains N space-separated integers A_1, A_2, \ldots, A_N .

Output

For each test case, print a single line containing one integer — the maximum value of $|A_x - A_y| + |A_y - A_z| + |A_z - A_x|$.

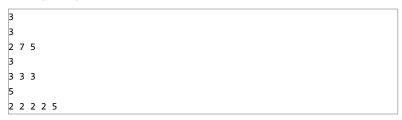
Constraints

- $1 \le T \le 5$
- $3 < N < 10^5$
- ullet $|A_i| \leq 10^9$ for each valid i

Subtasks

Subtask #1 (30 points): $N \leq 500$

Example Input



Example Output



Explanation

Example case 1: The value of the expression is always 10. For example, let x=1, y=2 and z=3, then it is |2-7|+|7-5|+|5-2|=5+2+3=10.

Example case 2: Since all values in the sequence are the same, the value of the expression is always 0.

Example case 3: One optimal solution is $x=1,\,y=2$ and z=5, which gives |2-2|+|2-5|+|5-2|=0+3+3=6.

Author: <u>daanish_adm (/users/daanish_adm)</u>

Date Added: 24-01-2021

Time Limit: 1 secs

Source Limit: 50000 Bytes

Languages: CPP14, C, JAVA, PYTH 3.6, PYTH, CS2, ADA, PYPY,

PYP3, TEXT, CPP17, PAS fpc, RUBY, PHP, NODEJS, GO, TCL, HASK, PERL, SCALA, kotlin, BASH, JS, PAS gpc, BF, LISP sbcl, CLOJ, LUA, D, R, CAML, rust, ASM, FORT, FS, LISP clisp, SQL, swift, SCM guile, PERL6, CLPS, WSPC, ERL, ICK, NICE, PRLG, ICON, PIKE, COB, SCM chicken, SCM qobi, ST, NEM, SQLQ

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CodeChef was created as a platform to help programmers make it big in the world of algorithms, computer programming, and programming contests. At CodeChef we work hard to revive the geek in you by hosting a programming contest at the start of the month and two smaller programming challenges at the middle and end of the month. We also aim to have training sessions and discussions related to algorithms, binary search, technicalities like array size and the likes. Apart from providing a platform for programming competitions, CodeChef also has various algorithm tutorials and forum discussions to help those who are new to the world of computer programming.

Practice Section (/problems/easy) - A Place to hone your 'Computer Programming Skills'

Try your hand at one of our many practice problems and submit your solution in the language of your choice. Our **programming contest** judge accepts solutions in over 55+ programming languages. Preparing for coding contests were never this much fun! Receive points, and move up through the CodeChef ranks. Use our practice section to better prepare yourself for the multiple **programming challenges** that take place through-out the month on CodeChef.

Compete (/contests) - Monthly Programming Contests, Cook-off and Lunchtime

Here is where you can show off your **computer programming skills**. Take part in our 10 days long monthly coding contest and the shorter format Cook-off and Lunchtime **coding contests**. Put yourself up for recognition and win great prizes. Our **programming contests** have prizes worth up to INR 20,000 (for Indian Community), \$700 (for Global Community) and lots more CodeChef goodies up for grabs.

Programming Tools	Practice Problems	<u>Initiatives</u>	<u>Policy</u>
Online IDE (/ide)	Easy (/problems/easy)	Go for Gold (/goforgold)	Terms of Service (/terms)
<u>Upcoming Coding Contests (/contests#future-contests)</u>	Medium (/problems/medium)	CodeChef for Schools (/school)	Privacy Policy (/privacy-policy)
Contest Hosting (/hostyourcontest)	Hard (/problems/hard)	College Chapters (/college-chapters)	Refund Policy (/refund-policy)
Problem Setting (/problemsetting)	<u>Challenge (/problems/challenge)</u>	CodeChef for Business (https://business.codechef.com)	Code of Conduct (/codeofconduct)
CodeChef Tutorials (/wiki/tutorials)	Peer (/problems/extcontest)		Bug Bounty Program (/bug-bounty-prog
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