ACM Fall 2025 Programming Contest

Lower Division

November 22, 2025

Do not open until contest starts
Instructions for Participants

- Contest URL: `https://domjudge.cs.fsu.edu`

- You have 5 hours to answer questions.

- Teams are eligible to win prizes (in either division) only if members of the team are enrolled at FSU AND do not include faculty/instructors.

- You may submit solutions in the following languages:

    - C/C++14
    - Python 3.9.2
    - Java 11
    - C# 7.0
        - .NET Version: Mono 6.8.0.105

- You are only allowed access to official language documentation and COP3014/COP3363 reference material. You are restricted to:

    - C/C++14: `http://www.cplusplus.com/reference/`
    - Java 11: `https://docs.oracle.com/en/java/javase/11/docs/api/index.html`
    - Python 3.9.2: `https://docs.python.org/3/`
    - C# 7.0 `https://docs.microsoft.com/en-us/dotnet/csharp/`

– COP3014/COP3363 Reference: You may use the course website(s)

- You are also allowed one textbook or material no larger than 8.5" x 11" x 2" volume.

- No other resources (e.g. Stack Overflow, Google, Wikipedia) are permitted. Using non-permitted materials will lead to disqualification.

- Teams are restricted to using one workstation (computer) each, including peripherals

- Use of a cell phone to circumvent these restrictions will lead to disqualification. Use of cell phones in contest rooms is not permitted.

- The Clarifications tab on Domjudge may be used to submit questions pertaining to each problem.

- **All input is redirected via STDIN.**

- **All output must be formatted to specification in terms of capitalization and spacing, and floating point precision. Please refer to the example output for each question.**

- Do not include a shebang in your submissions.

- **Scoring:**

  - Teams are ranked according to score. A higher score is rewarded by answering more questions while acquiring fewer penalties.
  - The team that solves the greatest number of questions in the quickest time wins.
  - Teams which solve the same number of problems are ranked by least total time.
  - Teams may resubmit solutions as many times as needed, but incorrect submission attempts will result in time penalties (and thus a lower score.)
  - The scoreboard may be accessed during the first four hours of the contest. The scoreboard will freeze during the final hour.

Question Writers:

- Niko Krinos
- Vinh Do
- Lucas Stone
- Colin Largen

- Ethan Anderson
- Aiden Allen
- Sharanya Jayaraman

A special thank you to all the question writers, proctors and volunteers for helping make this contest possible!

1   Maniacal Mathematicians

You and your team find yourselves in a dark cave 100 meters underneath Tallahassee. Equipped with flashlights your expedition searches every crevice of the calcite tomb that encapsulates you all. After a couple hours you find a cave wall that seems to not fit in with anything else, almost looking as if it used to be an opening but was paved over with cement. One of you tries knocking on the wall and are met with the voice of a person trapped on the other side who talks with you about their situation although muffled through the stone.

They state that there is a way in if you can create a key using a handful of stalagmites that surround the cemented wall. To do this, you must figure out if you can fit the rocks together at the hypotenuse to form a rough circle (angles between hypotenuse and adjacent leg are similar).

1.1   Input

Please note that all input read into the program is done via STDIN, (e.g. using cin statements in C++).

The number of triangles excluding the reference triangle, followed by one leg and the hypotenuse of the reference triangle to compare to, followed by one leg and the hypotenuse of a few triangles to compare to the first triangle.

1.2   Output

Please note that the output to the program should match exactly how it is in the sample output provided. (e.g. Do not prompt for user input, "Please enter the input: ", do not print out things such as "The number is: ", etc.)

"True" or "False" for each triangle excluding the reference triangle, separated by spaces. Your responses must be accurate down to 10^{-9}.

1.3   Sample Input/Output

DOMjudge will have sample Input and Output that you can download directly, so you do not need to manually type out the sample provided.

Sample Input	Sample Output
1 3 4 6 8	true

2 Peckish Pilgrims

Thanksgiving is soon approaching and the Pilgrims want to start feasting. But one young lad is quick to point out a puzzling predicament with their basted birds. Every member of their leadership convenes to make a solution, but none of them can do it in their heads. Their conundrum, you see, was related to time! The settlers all agreed to distribute the food as it was cooked by intervals of one turkey every three hours, but in one realization the second problem was revealed, a matter of human behavior! Nobody wants to wait around for more than three hours without food.

With your brains and your computer, can you calculate the maximum number of pilgrims waiting for food at the same hour and save their Thanksgiving plans?

2.1 Input

The size of the array, followed by the array. Every number will be an integer.

2.2 Output

The maximum number of concurrent pilgrims waiting for food.

2.3 Sample Input/Output

Sample Input	Sample Output
10 10 20 20 20 21 17 12 5 0 0	61

2.3.1 Tabular Visualization

Hour	Arriving Pilgrims	Waiting Pilgrims
0	10	10
1	20	30 (10+20)
2	20	50 (10+20+20)
3	20	60 (20+20+20) ⟵ the pilgrims from hour 0 leave
4	21	**61 (20+20+21)**
5	17	58 (20+21+17)
6	12	50 (21+17+12)
7	5	34 (17+12+5)
8	0	17 (12+5+0)
9	0	5 (5+0+0)

3 The OCD Thief

On gala eve, a master thief known as Phantom slips into the Alphabet gallery. Each artwork is an artistic lowercase letter a--z. For Phantom, a perfect gallery is when the number of all the letters presented are perfectly balanced. However, her velvet pouch fits *at most one* art piece—she may pilfer one, or take nothing at all.

You are given a lowercase string word representing the wall (letters a--z); Determine whether it is possible to make all *nonzero* letter frequencies equal by removing *at most one* character (possibly none).

3.1 Input

One line containing word ($1 \leq |word| \leq 10^5$), consisting only of lowercase English letters a--z.

3.2 Output

Print true if the goal is achievable; otherwise print false.

3.3 Sample Input/Output

Sample Input	Sample Output
abcc	true
aazz	true
aabbcd	false

4 Pie Voting

After a Thanksgiving potluck in the Love Building, all of the faculty in the Computer Science department voted on their favorite pie that was served.

They need you to write a program that returns the winner of the poll and the number of votes it received. All ties are broken by the lexicographically smaller pie (e.g. Apple beats Cherry).

4.1 Input

The number of total votes followed by the list of pies, separated by spaces.

4.2 Output

If there is no winner, print "NO WINNER". Otherwise, print the word "WINNER" followed by the pie that received most votes, as well as the number of votes it received. If it's a tie, output the smallest alphabetical pie as the winner.

4.3 Sample Input/Output

Sample Input	Sample Output
0	NO WINNER
3 Cherry Cherry Apple	WINNER Cherry 2
2 Apple Cherry	WINNER Apple 1

5   Grandma's Cornucopia

Grandma needs help preparing the food for Thanksgiving dinner, and you've come over to lend a hand. While she works on the main dishes, she asks you to fill a cornucopia with some fruits and vegetables — and to keep track of how many of each you use!

You'll first define your own lists of fruits and vegetables, then fill the cornucopia with a mix of them. Your goal is to count how many fruits and vegetables ended up inside.

5.1   Input

The input consists of:

- An integer F, the number of fruits

- Followed by F space-separated strings, each representing a fruit name

- An integer V, the number of vegetables

- Followed by V space-separated strings, each representing a vegetable name

- An integer N, the number of items placed into the cornucopia

- Followed by N space-separated strings, each representing the items placed

5.2   Output

A single line with the number of fruits and vegetables in the format `Fruits:  X, Vegetables: Y` where X is the count of fruits and Y is the count of vegetables.

5.3   Sample Input/Output

Sample Input	Sample Output
3	Fruits: 2, Vegetables: 3
apple banana grapes	
3	
carrot onion radish	
5	
banana carrot apple onion radish	

6   Scoring Drives

On a bright, beautiful, sunny game day in Tallahassee, the Seminoles offense runs a long series of plays. You have collected the integer sequence that represents drive-by-drive net yardage adjustments. A positive number means the drive gained yards on net. A negative number means the drive lost yards on net due to sacks, penalities, or turnovers. Zero means the drive broke even. A scoring window is defined as any contiguous block of drives.

You are tasked with counting how many scoring windows give total net yardage exactly equal to a target value S. In other words, given an array $d[1, ..., n]$ of integers, count the number of pairs (l, r) with $1 \leq l \leq r \leq n$ such that $d[l] + d[l+1] + ... + d[r] = S$.

6.1   Input

One line with two integers n, S where n is the number of drives recorded and S is the target net yardage, followed by one line with n integers: $d1\ d2\ ...\ dn$ where d is the net yardage adjustment for the ith drive.

6.2   Output

The count of contiguous drive windows whose total is exactly S.

6.3   Sample Input/Output

Sample Input	Sample Output
7 5	3
2 3 -1 2 3 -2 -1	

Anonymous Feedback Form

For these questions, please answer them in regards to registration, checking-in, participating, lunch, and/or other aspects of the contest that you can think of.

What is something about the contest you liked?

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What is something about the contest you did not like/found confusing?

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What is something about the contest you would change if you could?

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