

# Soluciones a Problemas de Algoritmos

Este es el archivo README.md del proyecto de GitHub <https://github.com/lzwjava/algorithm-solutions>.

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## Soluciones de Problemas de Algoritmos

Soluciones de algunos problemas de algoritmos de plataformas de jueces en línea.

| plataforma  | problemas resueltos |
|-------------|---------------------|
| UVa         | 568                 |
| Codeforces  | 419                 |
| LeetCode    | 20                  |
| Hacker Rank | 20(SQL)             |

| lenguaje | líneas de código |
|----------|------------------|
| Java     | 70851            |
| C++      | 3214             |
| Python   | 1193             |
| SQL      | 101              |

Este repositorio contiene soluciones a varios problemas de algoritmos de plataformas como Codeforces, HackerRank, LeetCode, Lintcode, Nowcoder y UVa. Cada solución se organiza por número de problema e incluye el código fuente, los archivos de entrada y, ocasionalmente, documentación adicional.

## Estructura del Repositorio

- README.md: Este archivo.
- codeforces/: Contiene soluciones a problemas de Codeforces.
- hacker\_rank/: Contiene soluciones a problemas SQL de HackerRank.
- leetcode/: Contiene soluciones a problemas de LeetCode.
- lintcode/: Contiene soluciones a problemas de Lintcode.
- nowcoder/: Contiene soluciones a problemas de Nowcoder.
- uva/: Contiene soluciones a problemas de UVa.

## **Codeforces**

Cada subdirectorio dentro del directorio `codeforces` lleva el nombre de un número de problema e incluye lo siguiente:

- `1.in`: Archivo de entrada para el problema.
- `src/Main.java`: Archivo de código fuente en Java que contiene la solución al problema.

## **HackerRank**

El directorio `hacker_rank` contiene archivos SQL para diversos problemas. Cada archivo lleva el nombre del problema que resuelve.

## **LeetCode**

El directorio `leetcode` contiene scripts en Python para diferentes problemas. Los archivos llevan el nombre de los problemas que resuelven, como `two_sum.py` o `valid_parentheses.py`.

## **Lintcode**

Cada subdirectorio dentro del directorio `lintcode` lleva el nombre de un número de problema e incluye lo siguiente:

- `src/com/lintcode/Main.java`: Archivo de clase principal para la solución.
- `src/com/lintcode/Solution.java`: Archivo de clase de solución para el problema.
- `src/com/lintcode/`: Archivos de clases adicionales según sea necesario por el problema.

## **Nowcoder**

Cada subdirectorio dentro del directorio `nowcoder` lleva el nombre de un problema e incluye lo siguiente:

- `Solution.java`: Archivo de clase de solución para el problema.
- `Test.java`: Archivo de clase de prueba para el problema.
- `TreeNode.java`: (Si corresponde) Archivo de clase `TreeNode` para problemas que involucran estructuras de árboles.

## **UVa**

Resueltos: 568, Envíos: 1776

| Q1   | Q2                           | Q3   |
|--|------------------------------|--|
| 100: The 3n + 1 Problem                    | 101: The Blocks Problem      | 102: Ecological Bin Packing                    |
| 103: Stacking Boxes                        | 104: Arbitrage               | 105: The Skyline Problem                       |
| 106: Fermat's Last Theorem                 | 107: The Cat in the Hat      | 108: Maximum Sum                               |
| 110: Meta-Loopless Sorts                   | 111: History Grading         | 112: Tree Summing                              |
| 113: Power of Cryptography                 | 116: Unidirectional TSP      | 118: Mutant Flatworld Explorers                |
| 119: Greedy Gift Givers                    | 120: Stacks of Flapjacks     | 122: Trees on the Level                        |
| 123: Searching Quickly                     | 124: Following Orders        | 127: "Accordian" Patience                      |
| 128: Software CRC                          | 129: Krypton Factor          | 131: The Domino Effect                         |
| 133: The Dole Queue                        | 136: Ugly Numbers            | 138: Street Numbers                            |
| 140: Bandwidth                             | 146: ID Codes                | 147: Dollars                                   |
| 151: Power Crisis                          | 152: Tree's a Crowd          | 156: Ananagrams                                |
| 160: Factors and Factorials                | 167: The Sultan's Successors | 185: Roman Numerals                            |
| 190: Circle Through Three Points           | 193: Graph Coloring          | 195: Anagram                                   |
| 196: Spreadsheet                           | 197: Orbiting Satellites     | 200: Rare Order                                |
| 201: Squares                               | 202: Repeating Decimals      | 208: Firetruck                                 |
| 210: Determining Periods                   | 211: The Domino Effect       | 213: Message Decoding                          |
| 216: Getting in Line                       | 221: Partitioning Polygon    | 225: Golomb Rulers                             |
| 227: Puzzle                                | 230: Borrowers               | 231: Testing the CATCHER                       |
| 247: Calling Circles                       | 253: Cube painting           | 256: Quirksome Squares                         |
| 260: Il Gioco dell'X                       | 264: Count on Cantor         | 272: TEX Quotes                                |
| 278: Chess                                 | 280: Vertex                  | 291: The House Of Santa Claus                  |
| 294: Divisors                              | 297: Quadtrees               | 299: Train Swapping                            |
| 301: Transportation                        | 305: Joseph                  | 307: Sticks                                    |
| 315: Network                               | 317: Power Transmission      | 324: Factorial Frequencies                     |
| 327: Evaluating Simple C Expressions       | 331: Mapping the Swaps       | 336: A Node Too Far                            |
| 340: Master-Mind Hints                     | 343: What Base Is This?      | 344: Roman Digititis                           |
| 348: Optimal Array Multiplication Sequence | 350: Pseudo-Random Numbers   | 352: The Seasonal War                          |
| 353: Pesky Palindromes                     | 357: Let Me Count The Ways   | 369: Combinations                              |
| 371: Ackermann Functions                   | 374: Big Mod                 | 375: Inscribed Circles and Isosceles Triangles |
| 378: Intersecting Lines                    | 382: Perfection              | 386: Perfect Cubes                             |
| 387: Repeated Substitution with Sed        | 389: Basically Speaking      | 392: Polynomial Showdown                       |
| 400: Unix ls                               | 401: Palindromes             | 406: Prime Cuts                                |
| 408: Uniform Generator                     | 409: Excuses, Excuses!       | 412: Pi  |
| 414: Machined Surfaces                     | 417: Word Index              | 424: Integer Inquiry                           |

| Q1  | Q2   | Q3   |
|---|--|--|
| 429: Word Transformation                          | 437: The Tower of Babylon                              | 438: The Circumference of the Circle         |
| 439: Knight Moves                                 | 440: Eeny Meeny Moo                                    | 441: Lotto                                   |
| 442: Matrix Chain Multiplication                  | 443: Humble Numbers                                    | 444: Encoder and Decoder                     |
| 445: Marvelous Mazes                              | 446: Kibbles n' Bitsn'Bits 'n'Bits                     | 455: Periodic Strings                        |
| 457: Linear Cellular Automata                     | 458: The Decoder                                       | 459: Graph Connectivity                      |
| 465: Overflow                                     | 469: Wetlands of Florida                               | 476: Points in Figures: Rectangles           |
| 477: Points in Figures: Rectangles and Circles    | 478: Points in Figures: Rectangles, Circles, Triangles | 481: What Goes Up                            |
| 482: Permutation Arrays                           | 483: Word Scramble                                     | 484: The Department of Redundancy Department |
| 488: Triangle Wave                                | 489: Hangman Judge                                     | 490: Rotating Sentences                      |
| 492: Pig-Latin                                    | 494: Kindergarten Counting Game                        | 495: Fibonacci Freeze                        |
| 496: Simply Subsets                               | 497: Strategic Defense Initiative                      | 499: What's The Frequency, Kenneth?          |
| 507: Jill Rides Again                             | 509: Just the Facts                                    | 512: Taiwan Railway                          |
| 514: Rails  | 524: Prime Ring Problem                                | 530: Binomial Showdown                       |
| 531: Compromise                                   | 532: Dungeon Master                                    | 534: Frogger                                 |
| 536: Tree Recovery                                | 537: Railroads   | 539: The Settlers of Catan                   |
| 540: Team Queue                                   | 541: Error Correction                                  | 543: Goldbach's Conjecture                   |
| 544: Heavy Cargo                                  | 548: Tree  | 550: Multiplying by Rotation                 |
| 558: Wormholes                                    | 562: Dividing coins                                    | 567: Risk                                    |
| 568: Just the Facts                               | 572: Oil Deposits                                      | 573: The Snail                               |
| 574: Sum It Up                                    | 575: Skew Binary                                       | 576: Haiku Review                            |
| 579: Clock Hands                                  | 583: Prime Factors                                     | 591: Box of Bricks                           |
| 594: One Little, Two Little, Three Little Endians | 612: DNA Sorting                                       | 621: Secret Research                         |
| 623: 500!   | 624: CD  | 637: Booklet Printing                        |
| 639: Don't Get Rooked                             | 640: Self Numbers                                      | 644: Immediate Decodability                  |
| 657: The die is cast                              | 661: Blowing Fuses                                     | 673: Parentheses Balance                     |
| 674: Coin Change                                  | 679: Dropping Balls                                    | 686: Goldbach's Conjecture (II)              |
| 694: The Collatz Sequence                         | 696: How Many Knights                                  | 699: The Falling Leaves                      |
| 705: Slash Maze                                   | 706: LC-Display  | 712: S-Trees                                 |
| 713: Adding Reversed Numbers                      | 714: Copying Books                                     | 725: Division                                |
| 727: Equation                                     | 729: The Hamming Distance Problem                      | 748: Exponentiation                          |
| 750: 8 Queens Chess Problem                       | 755: 487-3279  | 784: Maze Exploration                        |

| Q1   | Q2                                    | Q3                                      |
|--|---------------------------------------|---|
| 793: Network Connections                     | 796: Critical Links                   | 815: Flooded!                           |
| 818: Job Matching                            | 820: Internet Bandwidth               | 821: Page Hopping                       |
| 834: Continued Fractions                     | 836: Largest Submatrix                | 839: Not so Mobile                      |
| 846: Steps                                   | 847: A Multiplication Game            | 900: Brick Wall Patterns                |
| 913: Joana and the Odd Numbers               | 924: Spreading The News               | 929: Number Maze                        |
| 948: Fibonaccimal Base                       | 993: Product of digits                | 1124: Celebrity jeopardy                |
| 1149: Dangerous Dive                         | 1152: 4 Values whose Sum is 0         | 1203: Argus                             |
| 1225: Digit Counting                         | 1230: MODEX                           | 1237: Expert Enough?                    |
| 1260: Sales                                  | 1339: Ancient Cipher                  | 1368: DNA Consensus String              |
| 1374: Power Transmission                     | 1451: Ghostbusters 2                  | 1471: Dangerous Dive                    |
| 1583: Digital Roots                          | 1584: Mathematics                     | 1585: Score                             |
| 1586: Molar Mass                             | 1587: Box                             | 1588: War                               |
| 1589: Partitioning                           | 1590: Elevator                        | 1592: Transmission                      |
| 1593: Pipes                                  | 1594: Diamond                         | 1595: One Liner                         |
| 1604: Jumping Champion                       | 1605: Fibonacci Sum                   | 1606: Candy                             |
| 1607: Kaprekar Numbers                       | 1608: Random Walk                     | 1609: Look-and-say sequence             |
| 10000: Longest Paths                         | 10003: Cutting Sticks                 | 10004: Bicoloring                       |
| 10006: Carmichael Numbers                    | 10008: What's Cryptanalysis?          | 10010: Where's Waldorf?                 |
| 10012: How Big Is It?                        | 10013: Super long sums                | 10014: Simple Base Conversion           |
| 10018: Reverse and Add                       | 10019: Funny Encryption Method        | 10025: The Game of MasterMind           |
| 10026: Shoemaker's Problem                   | 10033: Billiard                       | 10034: Freckles                         |
| 10035: Primary Arithmetic                    | 10036: Divisibility                   | 10038: Jolly Jumpers                    |
| 10041: Vito's Family                         | 10042: Smith Numbers                  | 10047: The Monocycle                    |
| 10048: Audiophobia                           | 10050: Hartals                        | 10054: The Necklace                     |
| 10055: Hashmat the Brave<br>Warrior          | 10056: What is the Probability?       | 10061: How to solve the<br>cryptarithm? |
| 10062: Tell me the frequencies!              | 10066: The Twin Towers                | 10067: Playing with Wheels              |
| 10070: Leap Year or Not Leap<br>Year and ... | 10071: Back to High School<br>Physics | 10074: Take the Land                    |
| 10077: The Stern-Brocot Number<br>System     | 10079: Pizza Cutting                  | 10082: WERTYU                           |
| 10098: Generating Fast                       | 10099: The Tourist Guide              | 10101: Bangla Numbers                   |
| 10102: The path in the colored<br>field      | 10104: Euclid Problem                 | 10105: Polynomial Coefficients          |
| 10106: Product                               | 10107: What is the Median?            | 10110: Light, more light                |
| 10112: Myacron Lifetime<br>Achievement Award | 10114: Loansome Car Buyer             | 10115: Automatic Editing                |
| 10116: Robot Motion                          | 10123: Snowball Fight!                | 10125: Sumsets                          |

| Q1                                       | Q2                                   | Q3                                    |
|--|--------------------------------------|---------------------------------------|
| 10127: On a Diet                         | 10129: Play on Words                 | 10130: SuperSale                      |
| 10131: Is Bigger Smarter?                | 10137: The Trip                      | 10139: Factovisors                    |
| 10140: Prime Distance                    | 10141: Request for Proposal          | 10152: ShellSort                      |
| 10160: Servicing Stations                | 10161: Ant on a Chessboard           | 10167: Birthday Cake                  |
| 10168: Summation of Four Primes          | 10170: The Hotel with Infinite Rooms | 10177: Magic Square Palindromes       |
| 10179: Irreducible Basic Fractions       | 10183: How many Fibs?                | 10189: Minesweeper                    |
| 10190: Divide, But Not Quite Conquer!    | 10191: Longest Nap                   | 10192: Vacation                       |
| 10193: All You Need Is Love              | 10194: Football (aka Soccer)         | 10195: The Knights Of The Round Table |
| 10198: Counting                          | 10199: Tourist Guide                 | 10205: Stack 'em Up                   |
| 10209: Is This Integration?              | 10219: Find the ways!                | 10220: I Love Big Numbers!            |
| 10221: Two-Three Move                    | 10222: Decode the Message            | 10226: Hardwood Species               |
| 10229: Modular Fibonacci                 | 10235: Simply Emirp                  | 10242: Fourth Point !!                |
| 10245: The Closest Pair Problem          | 10250: The Other Two Trees           | 10252: Common Permutation             |
| 10258: Contest Scoreboard                | 10260: Soundex                       | 10267: Graphical Editor               |
| 10276: Hanoi Tower Troubles Again!       | 10281: Average Speed                 | 10282: Babelfish                      |
| 10285: Longest Run on a Snowboard        | 10286: Trouble with a Pentagon       | 10295: Hay Points                     |
| 10298: Power Strings                     | 10299: Relatives                     | 10300: Ecological Premium             |
| 10302: Summation of Polynomials          | 10305: Ordering Tasks                | 10310: Dog and Gopher                 |
| 10323: Factorial! You Must be Kidding!!! | 10324: Zeros and Ones                | 10327: Flip Sort                      |
| 10334: Ray Through Glasses               | 10336: Rank the Languages            | 10338: Mischievous Children           |
| 10340: All in All                        | 10341: Solve It                      | 10344: 23 out of 5                    |
| 10346: Peter's Smokes                    | 10347: Medians                       | 10361: Automatic Poetry               |
| 10369: Arctic Network                    | 10370: Above Average                 | 10387: Billiard Balls                 |
| 10391: Compound Words                    | 10392: Factoring Large Numbers       | 10394: Twin Primes                    |
| 10397: Connect the Campus                | 10405: Longest Common Subsequence    | 10409: Die Game                       |
| 10420: List of Conquests                 | 10424: Love Calculator               | 10432: Warehouse                      |
| 10450: World Cup Noise                   | 10452: Marcus                        | 10465: Homer Simpson                  |
| 10469: To Carry or not to Carry          | 10473: Climbing Trees                | 10474: The Candyman Can               |
| 10487: Closest Sums                      | 10494: If We Were a Child Again      | 10496: Collecting Beepers             |
| 10499: Big Big Real Numbers              | 10515: Power Sum                     | 10523: Very Easy !!!                  |

| Q1                                      | Q2   | Q3                                  |
|---|--|-------------------------------------|
| 10530: Guessing Game                    | 10533: Digit Primes                        | 10534: Wavio Sequence               |
| 10550: Combination Lock                 | 10557: XYZZY                               | 10562: Undraw the Trees             |
| 10579: Fibonacci Numbers                | 10583: Ubiquitous Religions                | 10591: Happy Numbers                |
| 10596: Deep Down Below                  | 10600: ACM Contest and<br>Blackout         | 10603: The Experimental Library     |
| 10608: Friends                          | 10611: The Playboy Chimp                   | 10616: Divisible Group Sums         |
| 10653: Bombs! NO they are<br>Mines!!    | 10656: Maximum Sum (II)                    | 10664: Luggage                      |
| 10673: Play with Floor and Ceil         | 10679: I Love Strings!!                    | 10684: The jackpot                  |
| 10696: f91                              | 10699: Count the factors                   | 10703: Free spots                   |
| 10719: Quirky Quantifiers               | 10763: Foreign Exchange                    | 10773: Back to Intermediate<br>Math |
| 10783: Odd Sum                          | 10784: Diagonal                            | 10785: Speed limit                  |
| 10789: Primo Words                      | 10790: How many points of<br>intersection? | 10810: Ultra-QuickSort              |
| 10812: Beat the Spread!                 | 10815: Andy's First Dictionary             | 10878: Decode the tape              |
| 10879: Maximum Sum (II)                 | 10905: Children's Game                     | 10911: Forming Quiz Teams           |
| 10916: Factstone Benchmark              | 10921: Find the Telephone                  | 10922: 2520                         |
| 10924: Simple Minded Hashing            | 10929: You can say 11                      | 10931: Parity                       |
| 10935: Throwing cards away I            | 10940: Throwing cards away II              | 10943: How do you add?              |
| 10945: Mother bear                      | 10948: The primary problem                 | 10954: Add All                      |
| 10963: The Swallowing Ground            | 10970: Big Chocolate                       | 10976: Fractions Again?!            |
| 10986: Sending email                    | 11000: Bee                                 | 11044: Searching for Nessy          |
| 11054: Wine trading in Gergovia         | 11057: Exact Sum                           | 11059: Maximum Product              |
| 11060: Beverages                        | 11085: Back to the 8-Queens                | 11093: Just Finish it up            |
| 11094: Continents                       | 11111: Generalized Matrioshkas             | 11134: Fabled Rooks                 |
| 11137: Triple Fat Ladies                | 11150: Cola                                | 11151: Longest Palindrome           |
| 11152: Colourful Flowers                | 11172: Relational Operator                 | 11185: Ternary                      |
| 11192: No Problem!                      | 11205: The broken pedometer                | 11212: Editing a Book               |
| 11214: Aladdin and the Flying<br>Carpet | 11219: How Old Are You?                    | 11231: Black and white painting     |
| 11234: Expressions                      | 11235: Frequent Values                     | 11244: Counting Stars               |
| 11286: Conformity                       | 11292: Dragon of Loowater                  | 11332: Summing Digits               |
| 11340: Newspaper                        | 11349: Symmetric Matrix                    | 11362: Phone List                   |
| 11364: Parking                          | 11369: Shopaholic                          | 11388: GCD LCM                      |
| 11389: The Bus Driver Problem           | 11417: GCD                                 | 11428: Cubes                        |
| 11450: Wedding Shopping                 | 11455: Behold my quadrangle                | 11461: Square Numbers               |

| Q1   | Q2                                     | Q3                                     |
|--|--|--|
| 11462: Age Sort                            | 11479: Is this the easiest problem?    | 11494: Queen                           |
| 11498: Division of Nlogonia                | 11503: Virtual Friends                 | 11504: Dominos                         |
| 11530: SMS Typing                          | 11541: Decoding                        | 11547: Automatic Answer                |
| 11559: Event Planning                      | 11565: Simple Equations                | 11572: Unique Snowflakes               |
| 11577: Letter Frequency                    | 11586: Train Tracks                    | 11608: No Problem!                     |
| 11614: Etruscan Warriors Never Play Chess  | 11624: Fire!                           | 11631: Dark roads                      |
| 11636: Hello World!                        | 11650: Mirror Clock                    | 11661: Airport                         |
| 11677: Alarm Clock                         | 11679: Sub-prime                       | 11689: Soda Surpler                    |
| 11713: Abstract Names                      | 11715: Car                             | 11716: Digital Fortress                |
| 11723: Numbering Roads                     | 11727: Cost Cutting                    | 11729: Commando War                    |
| 11734: Big Number of Teams will Solve This | 11743: Credit Check                    | 11764: Jumping Mario                   |
| 11777: Automate the Grades                 | 11799: Horror Dash                     | 11805: Bafana Bafana                   |
| 11809: Floating Point Numbers              | 11827: Maximum GCD                     | 11831: Sticker Collector Robot         |
| 11849: CD                                  | 11854: Egypt                           | 11875: Brick Game                      |
| 11877: The Coco-Cola Store                 | 11879: Multiple of 17                  | 11900: Boiled Eggs                     |
| 11933: Splitting Numbers                   | 11934: Magic Formula                   | 11936: The Lazy Lumberjacks            |
| 11942: Lumberjack Sequencing               | 11953: Battleships                     | 11984: A Change in Thermal Unit        |
| 11988: Broken Keyboard (a.k.a. Beiju Text) | 11991: Easy Problem from Rujia Liu?    | 11995: I Can Guess the Data Structure! |
| 12015: Google is Feeling Lucky             | 12032: The Monkey and the Oiled Bamboo | 12096: The SetStack Computer           |
| 12100: Printer Queue                       | 12107: One-Two-Three                   | 12108: Extraordinarily Tired Students  |
| 12113: Sum of Different Primes             | 12149: Feynman                         | 12157: Tariff Plan                     |
| 12174: Assemble                            | 12219: Searching Quickly               | 12250: Language Detection              |
| 12279: Emoogle Balance                     | 12289: One-Two-Three                   | 12325: Exact Change                    |
| 12333: Where is the Marble?                | 12372: Packing for Holiday             | 12403: Save Setu                       |
| 12405: Scarecrow                           | 12412: A Problem of Miscommunication   | 12455: Bars                            |
| 12468: Zapping                             | 12478: Hardest Problem Ever (easy)     | 12502: Three Families                  |
| 12503: Robot Instructions                  | 12504: Updating a Dictionary           | 12545: Bits and Pieces                 |
| 12554: A Child's Play                      | 12558: Cycle Finding                   | 12569: Sale                            |
| 12577: Hajj-e-Akbar                        | 12578: 10:6:2                          | 12627: Error Correction                |
| 12646: Majority Decision                   | 12657: Boxes in a Line                 |  |

## Codeforces

| Q1                                   | Q2                                     | Q3                                 |
|--------------------------------------|--|------------------------------------|
| 1003A: Polycarp's Pockets            | 1030A: In Search of an Easy Problem    | 1077A: Frog Jumping                |
| 1092B: Teams Forming                 | 1095A: Repeating Cipher                | 1097A: Gennady and a Card Game     |
| 110A: Nearly Lucky Number            | 112A: Petya and Strings                | 1154A: Restoring Three Numbers     |
| 115A: Party                          | 116A: Tram                             | 1183A: Nearest Interesting Number  |
| 1186A: Vus the Cossack and a Contest | 118A: String Task                      | 1196A: Three Piles of Candies      |
| 119A: Epic Game                      | 1206B: Make Product Equal One          | 1220A: Cards                       |
| 122A: Lucky Division                 | 1234A: Equalize Prices Again           | 124A: The Number of Positions      |
| 1256A: Payment Without Change        | 1283A: Minutes Before the New Year     | 1285A: Mezo Playing Zoma           |
| 1294A: Collecting Coins              | 1294C: Product of Three Numbers        | 1296A: Array with Odd Sum          |
| 1296B: Food Buying                   | 1303A: Erasing Zeroes                  | 1304A: Two Rabbits                 |
| 1311A: Add Odd or Subtract Even      | 1312A: Two Regular Polygons            | 131A: cAPS IOCK                    |
| 1324A: Yet Another Tetris Problem    | 1324B: Yet Another Palindrome Problem  | 1324C: Frog Jumps                  |
| 1325A: EhAb AnD gCd                  | 1325B: CopyCopyCopyCopyCopy            | 1326A: Bad Ugly Numbers            |
| 1326B: Maximums                      | 1327A: Sum of Odd Integers             | 1328A: Divisibility Problem        |
| 1328B: K-th Beautiful String         | 1328C: Ternary XOR                     | 1333A: Little Artem                |
| 1334B: Middle Class                  | 1335A: Candies and Two Sisters         | 1335B: Fair Division               |
| 1335C: Hidden Word                   | 1335D: Anti-Sudoku                     | 1337A: Ichihime and Triangle       |
| 1337B: Kana and Dragon Quest game    | 1339A: Filling Diamonds                | 1339B: Sorted Adjacent Differences |
| 133A: HQ9+                           | 1341A: Nastya and Rice                 | 1342A: Road To Zero                |
| 1342B: Binary Period                 | 1343A: Candies                         | 1343B: Balanced Array              |
| 1343C: Alternating Subsequence       | 1345A: Hilbert's Hotel                 | 1345B: Card Constructions          |
| 1348A: Phoenix and Balance           | 1350A: Orac and Factors                | 1352A: Sum of Round Numbers        |
| 1352B: Same Parity Summands          | 1352C: K-th Not Divisible by n         | 1353A: Most Unstable Array         |
| 1353B: Number of Apartments          | 1353C: Board Moves                     | 1354A: Alarm Clock                 |
| 1354B: Ternary String                | 1355A: Sequence with Digits            | 1355B: Young Explorers             |
| 1358A: Park Lighting                 | 1358B: Maria Breaks the Self-isolation | 1359A: Berland Poker               |
| 1359B: New Theatre Square            | 1360A: Minimal Square                  | 1360B: Honest Coach                |
| 1360C: Similar Pairs                 | 1360D: Buying Shovels                  | 1363A: Odd Selection               |
| 1365A: Matrix Game                   | 1365B: Trouble Sort                    | 1366A: Shovels and Swords          |

| Q1                                       | Q2                                | Q3  |
|--|-----------------------------------|---|
| 1367A: Short Substrings                  | 1367B: Even Array                 | 1368A: C+=                                |
| 1369A: FashionabLee                      | 1369B: AccurateLee                | 136A: Presents                            |
| 1370A: Maximum GCD                       | 1371A: Magical Sticks             | 1372A: Omkar and Password                 |
| 1372B: Omkar and Last Class of Math      | 1373A: Donut Shops                | 1373B: Balanced Tunnel                    |
| 1374A: Required Remainder                | 1374B: Multiply by 2, divide by 6 | 1374C: Move Brackets                      |
| 1382A: Common Subsequence                | 1382B: Sequential Nim             | 1385A: Three Pairwise Maximums            |
| 1385B: Restore the Permutation by Merger | 1385C: Make It Good               | 1388A: Captain Flint and Crew Recruitment |
| 1389A: LCM Problem                       | 1391A: Suborray                   | 1391B: Fix You                            |
| 1397A: Juggling Letters                  | 1398A: Bad Triangle               | 1398B: Substrings Sort                    |
| 1399A: Remove Smallest                   | 1399B: Gifts Fixing               | 1399C: Boats Competition                  |
| 1400A: String Similarity                 | 1401A: Distance and Axis          | 1409A: Yet Another Two Integers Problem   |
| 1409B: Minimum Product                   | 141A: Amusing Joke                | 1426A: Floor Number                       |
| 1433A: Boring Apartments                 | 1433B: Yet Another Bookshelf      | 1433C: Dominant Piranha                   |
| 1436A: Reorder                           | 144A: Arrival of the General      | 1451A: Subtract or Divide                 |
| 1454A: Special Permutation               | 1454B: Unique Bid Auction         | 1455A: Strange Functions                  |
| 1462A: Favorite Sequence                 | 1462B: Last Year's Substring      | 1462C: Unique Number                      |
| 1466A: Bovine Dilemma                    | 1467A: Wizard of Orz              | 1469A: Regular Bracket Sequence           |
| 1472A: Cards for Friends                 | 1472B: Fair Division              | 1472C: Long Jumps                         |
| 1473A: Replacing Elements                | 1473B: String LCM                 | 1474A: Puzzle From the Future             |
| 1475A: Odd Divisor                       | 1475B: New Year's Number          | 1476A: K-divisible Sum                    |
| 1478A: Nezzar and Colorful Balls         | 1480A: Yet Another String Game    | 1481A: Space Navigation                   |
| 1486A: Shifting Stacks                   | 1487A: Arena                      | 148A: Insomnia cure                       |
| 1490A: Dense Array                       | 1490B: Balanced Remainders        | 1490C: Sum of Cubes                       |
| 1497A: Meximization                      | 149A: Business trip               | 1506A: Strange Table                      |
| 1509A: Average Height                    | 1512A: Spy Detected!              | 1512B: Almost Rectangle                   |
| 1514A: Perfectly Imperfect Array         | 1516A: Tit for Tat                | 1517A: Sum of 2050                        |
| 1519A: Red and Blue Beans                | 1519B: The Cake Is a Lie          | 151A: Soft Drinking                       |
| 1520A: Do Not Be Distracted!             | 1520B: Ordinary Numbers           | 1520C: Not Adjacent Matrix                |
| 1520D: Same Differences                  | 1521A: Spy Syndrome 2             | 1525A: Potion-making                      |
| 1526A: Mean Inequality                   | 1527A: And Then There Were K      | 1529A: In Game Theory                     |
| 1535A: Fair Playoff                      | 1535B: Array Reordering           | 1537A: Arithmetic Array                   |
| 1537B: Bad Boy                           | 1538A: Stone Game                 | 1538B: Friends and Gifts                  |
| 1541A: Pretty Permutations               | 1542A: Odd Set                    | 1547A: Shortest Path with Obstacle        |

| Q1                                | Q2                                | Q3                                |
|-----------------------------------|-----------------------------------|-----------------------------------|
| 1547B: Alphabetical Strings       | 1549A: Gregor and the Pawn Game   | 1550A: Find The Array             |
| 1551A: Polycarp and Coins         | 1551B1: Wonderful Coloring - 1    | 1552A: Subsequence Addition       |
| 1553A: Digits Sum                 | 1554A: Cherry                     | 1555A: PizzaForces                |
| 1557A: Ezzat and Two Subsequences | 155A: I_love_%username%           | 1560A: Dislike of Threes          |
| 1560B: Who's Opposite?            | 1560C: Infinity Table             | 1562A: The Great Hero             |
| 1567A: Domino Disaster            | 1569A: The Raising Sand           | 1579A: Casimir's String Solitaire |
| 1582A: Luntik and Concerts        | 1582B: Luntik and Subsequences    | 1582C: Luntik and Subsequences    |
| 1585A: Pretty Permutations        | 1585B: Find The Array             | 1585C: Wonderful Coloring - 1     |
| 158A: Next Round                  | 158B: Taxi                        | 1593A: Casimir's String Solitaire |
| 1607A: Dislike of Threes          | 1608A: Luntik and Concerts        | 1608B: Luntik and Subsequences    |
| 1609A: Domino Disaster            | 1609B: Infinity Table             | 1609C: The Great Hero             |
| 160A: Luntik and Subsequences     | 1610A: Pretty Permutations        | 1610B: Find The Array             |
| 1610C: Wonderful Coloring - 1     | 1611A: Next Round                 | 1612A: Taxi                       |
| 1612B: Casimir's String Solitaire | 1612C: Dislike of Threes          | 1613A: Luntik and Concerts        |
| 1613B: Luntik and Subsequences    | 1613C: Domino Disaster            | 1614A: Infinity Table             |
| 1614B: The Great Hero             | 1614C: Luntik and Subsequences    | 1615A: Pretty Permutations        |
| 1615B: Find The Array             | 1615C: Wonderful Coloring - 1     | 1616A: Next Round                 |
| 1616B: Taxi                       | 1616C: Casimir's String Solitaire | 1617A: Dislike of Threes          |
| 1617B: Luntik and Concerts        | 1617C: Luntik and Subsequences    | 1618A: Domino Disaster            |
| 1618B: Infinity Table             | 1618C: The Great Hero             | 1618D: Luntik and Subsequences    |
| 1619A: Pretty Permutations        | 1619B: Find The Array             | 1619C: Wonderful Coloring - 1     |
| 1620A: Next Round                 | 1620B: Taxi                       | 1620C: Casimir's String Solitaire |
| 1621A: Dislike of Threes          | 1621B: Luntik and Concerts        | 1622A: Luntik and Subsequences    |
| 1622B: Domino Disaster            | 1622C: Infinity Table             | 1623A: The Great Hero             |
| 1623B: Luntik and Subsequences    | 1623C: Pretty Permutations        | 1624A: Find The Array             |
| 1627A: Wonderful Coloring - 1     | 1627B: Next Round                 | 1669A: Taxi                       |
| 1676A: Casimir's String Solitaire | 1692A: Dislike of Threes          | 1703A: Luntik and Concerts        |
| 1742A: Luntik and Subsequences    | 1763A: Domino Disaster            | 189A: Infinity Table              |
| 1902A: The Great Hero             | 1902B: Luntik and Subsequences    | 1902C: Pretty Permutations        |
| 1902D: Find The Array             | 1902E: Wonderful Coloring - 1     | 1902F: Next Round                 |
| 1907A: Taxi                       | 1907B: Casimir's String Solitaire | 1907C: Dislike of Threes          |
| 1915A: Luntik and Concerts        | 1915B: Luntik and Subsequences    | 1915C: Domino Disaster            |
| 1915D: Infinity Table             | 1915E: The Great Hero             | 1915F: Luntik and Subsequences    |
| 1916A: Pretty Permutations        | 1916B: Find The Array             | 1916C: Wonderful Coloring - 1     |
| 1917A: Next Round                 | 1917B: Taxi                       | 1917C: Casimir's String Solitaire |
| 1917D: Dislike of Threes          | 1A: Theatre Square                | 200B: Drinks                      |

| Q1  | Q2                                     | Q3   |
|---|--|--|
| 208A: Dubstep                               | 214A: System of Equations              | 228A: Is your horseshoe on the other hoof? |
| 230A: Dragons                               | 230B: T-primes                         | 231A: Team                                 |
| 233A: Perfect Permutation                   | 236A: Boy or Girl                      | 255A: Greg's Workout                       |
| 25A: IQ test                                | 263A: Beautiful Matrix                 | 265A: Colorful Stones (Simplified Edition) |
| 266A: Stones on the Table                   | 266B: Queue at the School              | 268A: Games                                |
| 268B: Buttons                               | 270A: Fancy Fence                      | 271A: Beautiful Year                       |
| 279B: Books                                 | 281A: Word Capitalization              | 282A: Bit++                                |
| 313A: Ilya and Bank Account                 | 313B: Ilya and Queries                 | 318A: Even Odds                            |
| 320A: Magic Numbers                         | 327A: Flipping Game                    | 32B: Borze                                 |
| 330A: Cakeminator                           | 337A: Puzzles                          | 339A: Helpful Maths                        |
| 339B: Xenia and Ringroad                    | 344A: Magnets                          | 349A: Cinema Line                          |
| 34B: Sale                                   | 358A: Dima and Continuous Line         | 358B: Dima and a Bad X                     |
| 361A: Levko and Table                       | 363A: Soroban                          | 363B: Fence                                |
| 363C: Pashmak and Garden                    | 368B: Sereja and Suffixes              | 369A: Valera and Plates                    |
| 369B: Valera and Contest                    | 379A: New Year Candles                 | 381A: Sereja and Dima                      |
| 405A: Gravity Flip                          | 41A: Translation                       | 427A: Police Recruits                      |
| 431A: Black Square                          | 432A: Choosing Teams                   | 433B: Kuriyama Mirai's Stones              |
| 439A: Devu, the Singer and Churu, the Joker | 43A: Football                          | 443A: Anton and Letters                    |
| 448A: Rewards                               | 451A: Game With Sticks                 | 451B: Sort the Array                       |
| 455A: Boredom                               | 456A: Laptops                          | 459A: Pashmak and Garden                   |
| 459B: Pashmak and Flowers                   | 460A: Vasya and Socks                  | 466A: Cheap Travel                         |
| 466C: Number of Ways                        | 467A: George and Accommodation         | 467B: Fedor and New Game                   |
| 469A: I Wanna Be the Guy                    | 472A: Design Tutorial: Learn from Math | 474A: Keyboard                             |
| 474B: Worms                                 | 476A: Dreamoon and Stairs              | 476B: Dreamoon and WiFi                    |
| 478A: Initial Bet                           | 478B: Random Teams                     | 479A: Expression                           |
| 479C: Exams                                 | 486A: Calculating Function             | 489B: BerSU Ball                           |
| 489C: Given Length and Sum of Digits...     | 490A: Team Olympiad                    | 492A: Vanya and Cubes                      |
| 492B: Vanya and Lanterns                    | 499B: Lecture                          | 4A: Watermelon                             |
| 4C: Registration System                     | 500A: New Year Transportation          | 509A: Maximum in Table                     |
| 50A: Domino piling                          | 510A: Fox And Snake                    | 514A: Chewbacca and Number                 |
| 519B: A and B and Compilation Errors        | 520A: Pangram                          | 520B: Two Buttons                          |

| Q1                               | Q2   | Q3                           |
|----------------------------------|--|------------------------------|
| 540A: Combination Lock           | 546A: Soldier and Bananas                        | 550A: Two Substrings         |
| 556A: Case of the Zeros and Ones | 567A: Lineland Mail                              | 577A: Multiplication Table   |
| 579A: Raising Bacteria           | 580A: Kefa and First Steps                       | 580C: Kefa and Park          |
| 581A: Vasya the Hipster          | 584A: Olesya and Rodion                          | 58A: Chat room               |
| 599A: Patrick and Shopping       | 59A: Word  | 617A: Elephant               |
| 61A: Ultra-Fast Mathematician    | 630A: Again Twenty Five!                         | 677A: Vanya and Fence        |
| 686A: Free Ice Cream             | 688B: Lovely Palindromes                         | 69A: Young Physicist         |
| 702A: Maximum Increase           | 703A: Mishka and Game                            | 705A: Hulk                   |
| 706B: Interesting drink          | 707A: Brain's Photos                             | 711A: Bus to Udayland        |
| 71A: Way Too Long Words          | 723A: The New Year: Meeting Friends              | 731A: Night at the Museum    |
| 732A: Buy a Shovel               | 732B: Cormen —The Best Friend Of a Man           | 734A: Anton and Danik        |
| 734B: Anton and Digits           | 742A: Arpa's hard exam and Mehrdad's naive cheat | 749A: Bachgold Problem       |
| 750A: New Year and Hurry         | 758A: Holiday Of Equality                        | 766B: Mahmoud and a Triangle |
| 785A: Anton and Polyhedrons      | 791A: Bear and Big Brother                       | 80A: Panoramix's Prediction  |
| 822A: I'm bored with life        | 82A: Double Cola                                 | 894A: QAQ                    |
| 935A: Fafa and his Company       | 959A: Mahmoud and Ehab and the even-odd game     | 96A: Football                |
| 977A: Wrong Subtraction          | 977B: Two-gram                                   | 978B: File Name              |
| 996A: Hit the Lottery            | 9A: Die Roll                                     | CF1511A: Odd Divisor         |

## End

“Si la gente no cree que las matemáticas son simples, es solo porque no se dan cuenta de lo complicada que es la vida.”—John von Neumann