



CSES Problem Set

TASKS | [STATISTICS](#) | [HACKS](#)

General

[Introduction](#)

[Create new account](#)

[Statistics](#)


Introductory Problems

Weird Algorithm	85111 / 89104	—
Missing Number	72234 / 76309	—
Repetitions	63023 / 66148	—
Increasing Array	58698 / 61285	—
Permutations	51650 / 53440	—
Number Spiral	36556 / 39867	—
Two Knights	27331 / 28308	—
Two Sets	29522 / 32080	—
Bit Strings	34541 / 36514	—
Trailing Zeros	32279 / 34571	—
Coin Piles	28348 / 31325	—
Palindrome Reorder	25823 / 27580	—
Gray Code	15572 / 17806	—
Tower of Hanoi	14595 / 15234	—
Creating Strings	22358 / 23042	—
Apple Division	21672 / 24912	—
Chessboard and Queens	12912 / 13181	—
Digit Queries	8391 / 10141	—
Grid Paths	5363 / 6837	—



Sorting and Searching

 Distinct Numbers	39180 / 43318	—
 Apartments	28611 / 32639	—
 Ferris Wheel	27142 / 29787	—
 Concert Tickets	21722 / 25939	—
 Restaurant Customers	22416 / 24404	—
 Movie Festival	20963 / 22447	—
 Sum of Two Values	24745 / 28286	—
 Maximum Subarray Sum	24432 / 25746	—
 Stick Lengths	21555 / 22776	—
 Missing Coin Sum	14662 / 15245	—
 Collecting Numbers	15205 / 16497	—
 Collecting Numbers II	6129 / 8003	—
 Playlist	16278 / 19123	—
 Towers	16766 / 18118	—
 Traffic Lights	13124 / 14753	—
 Josephus Problem I	8555 / 9730	—
 Josephus Problem II	4992 / 6487	—
 Nested Ranges Check	4825 / 5715	—
 Nested Ranges Count	3445 / 3968	—
 Room Allocation	9492 / 11079	—
 Factory Machines	11748 / 13145	—
 Tasks and Deadlines	11046 / 11311	—
 Reading Books	8831 / 9496	—
 Sum of Three Values	12822 / 14561	—
 Sum of Four Values	8153 / 9349	—
 Nearest Smaller Values	10911 / 11357	—
 Subarray Sums I	13819 / 15022	—
 Subarray Sums II	12747 / 14697	—
 Subarray Divisibility	11272 / 12449	—
 Subarray Distinct Values	6277 / 6765	—
 Array Division	9860 / 10490	—
 Sliding Median	6882 / 7876	—
 Sliding Cost	4751 / 5536	—
 Movie Festival II	5895 / 7172	—
 Maximum Subarray Sum II	5381 / 6483	—

Dynamic Programming














 Dice Combinations	38668 / 41228	—
 Minimizing Coins	33199 / 36035	—
 Coin Combinations I	30542 / 33439	—
 Coin Combinations II	25892 / 29686	—
 Removing Digits	28551 / 29316	—
 Grid Paths	27199 / 28090	—
 Book Shop	23962 / 26868	—
 Array Description	17288 / 19531	—
 Counting Towers	9427 / 10017	—
 Edit Distance	18172 / 19333	—
 Rectangle Cutting	15188 / 16673	—
 Money Sums	18130 / 18955	—
 Removal Game	12870 / 14451	—
 Two Sets II	14347 / 15669	—
 Increasing Subsequence	14723 / 16746	—
 Projects	9847 / 11221	—
 Elevator Rides	5783 / 7473	—
 Counting Tilings	3309 / 3641	—
 Counting Numbers	4482 / 5097	—







Graph Algorithms

 Counting Rooms	26773 / 28580	—
 Labyrinth	17465 / 21780	—
 Building Roads	22905 / 23852	—
 Message Route	19476 / 20428	—
 Building Teams	18858 / 19813	—
 Round Trip	14863 / 16402	—
 Monsters	9081 / 11253	—
 Shortest Routes I	15921 / 17839	—
 Shortest Routes II	13303 / 14557	—
 High Score	6512 / 11050	—
 Flight Discount	9176 / 11321	—
 Cycle Finding	6973 / 8818	—
 Flight Routes	6434 / 7267	—
 Round Trip II	7788 / 8970	—
 Course Schedule	10671 / 11133	—


 Longest Flight Route	7046 / 8968	—
 Game Routes	7932 / 8615	—
 Investigation	5708 / 6211	—
 Planets Queries I	4732 / 5867	—
 Planets Queries II	1926 / 2417	—
 Planets Cycles	3207 / 3616	—
 Road Repair	7557 / 7924	—
 Road Construction	8009 / 8316	—
 Flight Routes Check	6858 / 7560	—
 Planets and Kingdoms	5563 / 5806	—
 Giant Pizza	2184 / 2482	—
 Coin Collector	3431 / 3931	—
 Mail Delivery	2977 / 3331	—
 De Bruijn Sequence	1611 / 1698	—
 Teleporters Path	2364 / 2672	—
 Hamiltonian Flights	3222 / 3704	—
 Knight's Tour	1394 / 1652	—
 Download Speed	2175 / 3283	—
 Police Chase	1870 / 2166	—
 School Dance	2034 / 2179	—
 Distinct Routes	1274 / 1782	—

Range Queries










 Static Range Sum Queries	17822 / 18673	—
 Static Range Minimum Queries	13373 / 14328	—
 Dynamic Range Sum Queries	13772 / 14425	—
 Dynamic Range Minimum Queries	12411 / 12727	—
 Range Xor Queries	12584 / 12768	—
 Range Update Queries	10041 / 10837	—
 Forest Queries	9861 / 10269	—
 Hotel Queries	7123 / 7527	—
 List Removals	5937 / 6273	—
 Salary Queries	4403 / 5307	—
 Prefix Sum Queries	3418 / 3771	—
 Pizzeria Queries	2815 / 2922	—
 Subarray Sum Queries	3844 / 4122	—

 Distinct Values Queries	3457 / 4260	—
 Increasing Array Queries	1219 / 1409	—
 Forest Queries II	2437 / 2639	—
 Range Updates and Sums	2801 / 3422	—
 Polynomial Queries	2141 / 2530	—
 Range Queries and Copies	1497 / 1638	—

Tree Algorithms

 Subordinates	15125 / 16391	—
 Tree Matching	8435 / 9989	—
 Tree Diameter	12551 / 13460	—
 Tree Distances I	9315 / 10129	—
 Tree Distances II	7596 / 7942	—
 Company Queries I	8430 / 8952	✗
 Company Queries II	7886 / 8353	—
 Distance Queries	7418 / 7947	—
 Counting Paths	4366 / 4686	—
 Subtree Queries	5392 / 5784	—
 Path Queries	4208 / 4458	—
 Path Queries II	1278 / 2352	—
 Distinct Colors	3994 / 4557	—
 Finding a Centroid	3179 / 3335	—
 Fixed-Length Paths I	1171 / 1820	—
 Fixed-Length Paths II	459 / 1269	—






Mathematics

 Josephus Queries	2024 / 2569	—
 Exponentiation	12371 / 13376	—
 Exponentiation II	8985 / 11119	—
 Counting Divisors	10603 / 12123	—
 Common Divisors	7196 / 8674	—
 Sum of Divisors	4149 / 6387	—
 Divisor Analysis	2638 / 3525	—
 Prime Multiples	2757 / 3267	—
 Counting Coprime Pairs	1757 / 2088	—








 Binomial Coefficients	5017 / 5710	—
 Creating Strings II	4192 / 4490	—
 Distributing Apples	4086 / 4434	—
 Christmas Party	3236 / 3522	—
 Bracket Sequences I	2160 / 2406	—
 Bracket Sequences II	1085 / 1257	—
 Counting Necklaces	1081 / 1169	—
 Counting Grids	858 / 922	—
 Fibonacci Numbers	3742 / 4792	—
 Throwing Dice	2098 / 2281	—
 Graph Paths I	1894 / 2045	—
 Graph Paths II	1598 / 1666	—
 Dice Probability	1829 / 1939	—
 Moving Robots	918 / 979	—
 Candy Lottery	1393 / 1433	—
 Inversion Probability	330 / 1264	—
 Stick Game	1859 / 1911	—
 Nim Game I	2331 / 2417	—
 Nim Game II	1897 / 1980	—
 Stair Game	1304 / 1434	—
 Grundy's Game	830 / 1040	—
 Another Game	884 / 960	—

String Algorithms

 Word Combinations	2628 / 4096	—
 String Matching	5158 / 7605	—
 Finding Borders	3904 / 4389	—
 Finding Periods	2620 / 3004	—
 Minimal Rotation	1370 / 2268	—
 Longest Palindrome	2098 / 2851	—
 Required Substring	816 / 1334	—
 Palindrome Queries	936 / 1103	—
 Finding Patterns	813 / 1215	—
 Counting Patterns	727 / 989	—
 Pattern Positions	644 / 837	—
 Distinct Substrings	781 / 946	—






 Repeating Substring	764 / 854	—
 String Functions	751 / 789	—
 Substring Order I	581 / 623	—
 Substring Order II	379 / 481	—
 Substring Distribution	511 / 559	—

Geometry

 Point Location Test	3542 / 3927	—
 Line Segment Intersection	2131 / 2697	—
 Polygon Area	2554 / 2683	—
 Point in Polygon	1356 / 1758	—
 Polygon Lattice Points	1165 / 1208	—
 Minimum Euclidean Distance	1071 / 1501	—
 Convex Hull	1695 / 2075	—





























Advanced Techniques













 Meet in the Middle	3135 / 4614	—
 Hamming Distance	1655 / 1795	—
 Beautiful Subgrids	1130 / 1283	—
 Reachable Nodes	1124 / 1228	—
 Reachability Queries	800 / 949	—
 Cut and Paste	730 / 825	—
 Substring Reversals	643 / 709	—
 Reversals and Sums	646 / 703	—
 Necessary Roads	946 / 974	—
 Necessary Cities	869 / 919	—
 Eulerian Subgraphs	420 / 446	—
 Monster Game I	599 / 661	—
 Monster Game II	541 / 587	—
 Subarray Squares	573 / 679	—
 Houses and Schools	398 / 453	—
 Knuth Division	453 / 514	—
 Apples and Bananas	429 / 478	—
 One Bit Positions	407 / 453	—
 Signal Processing	386 / 428	—

	New Roads Queries	962 / 1183	—
	Dynamic Connectivity	428 / 484	—
	Parcel Delivery	359 / 415	—
	Task Assignment	333 / 363	—
	Distinct Routes II	285 / 334	—

Additional Problems

	Shortest Subsequence	1700 / 2203	—
	Counting Bits	1965 / 2546	—
	Swap Game	1073 / 1379	—
	Prüfer Code	799 / 846	—
	Acyclic Graph Edges	1170 / 1252	—
	Strongly Connected Edges	676 / 740	—
	Even Outdegree Edges	629 / 737	—
	Multiplication Table	2132 / 2418	—
	Advertisement	2114 / 2263	—
	Special Substrings	473 / 516	—
	Permutation Inversions	523 / 578	—
	Maximum XOR Subarray	1257 / 1376	—
	Movie Festival Queries	559 / 632	—
	Chess Tournament	638 / 733	—
	Tree Traversals	613 / 690	—
	Network Renovation	524 / 708	—
	Graph Girth	1595 / 1873	—
	Intersection Points	938 / 1011	—
	Inverse Inversions	535 / 559	—
	Monotone Subsequences	342 / 378	—
	String Reorder	446 / 489	—
	Stack Weights	303 / 353	—
	Pyramid Array	430 / 514	—
	Increasing Subsequence II	1228 / 1324	—
	String Removals	556 / 606	—
	Bit Inversions	1310 / 1448	—
	Xor Pyramid	641 / 811	—
	Writing Numbers	448 / 486	—
	String Transform	280 / 350	—

 Letter Pair Move Game	97 / 142	—
 Maximum Building I	1118 / 1161	—
 Sorting Methods	462 / 498	—
 Cyclic Array	545 / 630	—
 List of Sums	261 / 335	—
 Increasing Array II	401 / 453	—
 Food Division	315 / 372	—
 Bit Problem	786 / 850	—
 Swap Round Sorting	231 / 290	—
 Binary Subsequences	122 / 192	—
 Tree Isomorphism I	585 / 678	—
 Counting Sequences	327 / 350	—
 Critical Cities	217 / 340	—
 School Excursion	720 / 764	—
 Coin Grid	392 / 458	—
 Robot Path	173 / 302	—
 Programmers and Artists	264 / 334	—
 Course Schedule II	866 / 1249	—
 Removing Digits II	104 / 217	—
 Coin Arrangement	174 / 233	—
 Counting Bishops	177 / 198	—
 Grid Puzzle I	267 / 296	—
 Grid Puzzle II	183 / 208	—
 Empty String	794 / 951	—
 Grid Paths	443 / 549	—
 Bit Substrings	186 / 237	—
 Reversal Sorting	173 / 212	—
 Counting Reorders	114 / 170	—
 Book Shop II	564 / 639	—
 Network Breakdown	532 / 561	—
 Visiting Cities	378 / 489	—
 Missing Coin Sum Queries	210 / 277	—
 Number Grid	519 / 624	—
 Maximum Building II	253 / 308	—
 Filling Trominos	100 / 173	—
 Stick Divisions	1913 / 2270	—

 Coding Company	744 / 957	—
 Flight Route Requests	240 / 290	—
 Two Stacks Sorting	71 / 270	—
 Tree Isomorphism II	478 / 541	—
 Forbidden Cities	358 / 455	—
 Area of Rectangles	558 / 634	—
 Grid Completion	109 / 147	—
 Creating Offices	221 / 294	—
 Permutations II	490 / 557	—
 Functional Graph Distribution	122 / 152	—
 New Flight Routes	194 / 428	—
 Grid Path Construction	54 / 190	—