

# Day

## Problem List

## 1. Simple Triangle Patterns

### Right-Angled Triangle

```

*
* *
* * *
* * * *
* * * * *

```

### Inverted Right-Angled Triangle

```

*****
****
***
**
*

```

## Number Triangle

1  
12  
123  
1234  
12345

### Character Triangle

A  
AB  
ABC  
ABCD  
ABCDE

## 2. Pyramid Patterns

### Star Pyramid

```

      *
    ***
  *****
*****
*****
*****

```

### Number Pyramid

1  
121  
12321  
1234321  
123454321

## Character Pyramid

A  
ABA  
ABCBA  
ABCDCA  
ABCDEDCBA

### 3. Inverted Pyramid Patterns

### Inverted Star Pyramid

```

*****
*****
****
***
**
*
```

### Inverted Number Pyramid

123454321  
1234321  
12321  
121  
1

# Day 1

```

      *
     **
    ***
   ****
  *****
 *****
*****

```

### Hollow Pyramid Star Pattern

```

*****
*       *
*     * *
*   *   *
* *     *
*       *

```

### Hollow Inverted Pyramid Star Pattern

A  
B B B  
C C C C C  
D D D D D D  
E E E E E E E  
F F F F F F F F  
G G G G G G  
H H H  
I

### Diamond Star Pattern

[illegible]

### Hollow Diamond Star Pattern

5	5	5	5	5	5	5	5
5	4	4	4	4	4	4	5
5	4	3	3	3	3	4	5
5	4	3	2	2	2	3	5
5	4	3	2	1	2	3	5
5	4	3	2	2	2	3	5
5	4	3	3	3	3	4	5
5	4	4	4	4	4	4	5
5	5	5	5	5	5	5	5

## Number pattern 18

```

    *
   **
  ***
     *
    **
   ***
       *
      **
     ***

```

For N=3 print above pattern

1 2 3 4 5  
 6 7 8 9  
 10 11 12  
 13 14 15  
 16 17 18  
 19 20 21  
 22 23 24  
 25 26 27  
 28 29 30  
 31 32 33  
 34 35 36  
 37 38 39  
 40 41 42  
 43 44 45  
 46 47 48  
 49 50 51  
 52 53 54  
 55 56 57  
 58 59 60  
 61 62 63  
 64 65 66  
 67 68 69  
 70 71 72  
 73 74 75  
 76 77 78  
 79 80 81  
 82 83 84  
 85 86 87  
 88 89 90  
 91 92 93  
 94 95 96  
 97 98 99  
 100 101 102  
 103 104 105  
 106 107 108  
 109 110 111  
 112 113 114  
 115 116 117  
 118 119 120  
 121 122 123  
 124 125 126  
 127 128 129  
 130 131 132  
 133 134 135  
 136 137 138  
 139 140 141  
 142 143 144  
 145 146 147  
 148 149 150  
 151 152 153  
 154 155 156  
 157 158 159  
 160 161 162  
 163 164 165  
 166 167 168  
 169 170 171  
 172 173 174  
 175 176 177  
 178 179 180  
 181 182 183  
 184 185 186  
 187 188 189  
 190 191 192  
 193 194 195  
 196 197 198  
 199 200 201  
 202 203 204  
 205 206 207  
 208 209 210  
 211 212 213  
 214 215 216  
 217 218 219  
 220 221 222  
 223 224 225  
 226 227 228  
 229 230 231  
 232 233 234  
 235 236 237  
 238 239 240  
 241 242 243  
 244 245 246  
 247 248 249  
 250 251 252  
 253 254 255  
 256 257 258  
 259 260 261  
 262 263 264  
 265 266 267  
 268 269 270  
 271 272 273  
 274 275 276  
 277 278 279  
 280 281 282  
 283 284 285  
 286 287 288  
 289 290 291  
 292 293 294  
 295 296 297  
 298 299 300  
 301 302 303  
 304 305 306  
 307 308 309  
 310 311 312  
 313 314 315  
 316 317 318  
 319 320 321  
 322 323 324  
 325 326 327  
 328 329 330  
 331 332 333  
 334 335 336  
 337 338 339  
 340 341 342  
 343 344 345  
 346 347 348  
 349 350 351  
 352 353 354  
 355 356 357  
 358 359 360  
 361 362 363  
 364 365 366  
 367 368 369  
 370 371 372  
 373 374 375  
 376 377 378  
 379 380 381  
 382 383 384  
 385 386 387  
 388 389 390  
 391 392 393  
 394 395 396  
 397 398 399  
 400 401 402  
 403 404 405  
 406 407 408  
 409 410 411  
 412 413 414  
 415 416 417  
 418 419 420  
 421 422 423  
 424 425 426  
 427 428 429  
 430 431 432  
 433 434 435  
 436 437 438  
 439 440 441  
 442 443 444  
 445 446 447  
 448 449 450  
 451 452 453  
 454 455 456  
 457 458 459  
 460 461 462  
 463 464 465  
 466 467 468  
 469 470 471  
 472 473 474  
 475 476 477  
 478 479 480  
 481 482 483  
 484 485 486  
 487 488 489  
 490 491 492  
 493 494 495  
 496 497 498  
 499 500 501  
 502 503 504  
 505 506 507  
 508 509 510  
 511 512 513  
 514 515 516  
 517 518 519  
 520 521 522  
 523 524 525  
 526 527 528  
 529 530 531  
 532 533 534  
 535 536 537  
 538 539 540  
 541 542 543  
 544 545 546  
 547 548 549  
 550 551 552  
 553 554 555  
 556 557 558  
 559 560 561  
 562 563 564  
 565 566 567  
 568 569 570  
 571 572 573  
 574 575 576  
 577 578 579  
 580 581 582  
 583 584 585  
 586 587 588  
 589 590 591  
 592 593 594  
 595 596 597  
 598 599 600  
 601 602 603  
 604 605 606  
 607 608 609  
 610 611 612  
 613 614 615  
 616 617 618  
 619 620 621  
 622 623 624  
 625 626 627  
 628 629 630  
 631 632 633  
 634 635 636  
 637 638 639  
 640 641 642  
 643 644 645  
 646 647 648  
 649 650 651  
 652 653 654  
 655 656 657  
 658 659 660  
 661 662 663  
 664 665 666  
 667 668 669  
 670 671 672  
 673 674 675  
 676 677 678  
 679 680 681  
 682 683 684  
 685 686 687  
 688 689 690  
 691 692 693  
 694 695 696  
 697 698 699  
 700 701 702  
 703 704 705  
 706 707 708  
 709 710 711  
 712 713 714  
 715 716 717  
 718 719 720  
 721 722 723  
 724 725 726  
 727 728 729  
 730 731 732  
 733 734 735  
 736 737 738  
 739 740 741  
 742 743 744  
 745 746 747  
 748 749 750  
 751 752 753  
 754 755 756  
 757 758 759  
 760 761 762  
 763 764 765  
 766 767 768  
 769 770 771  
 772 773 774  
 775 776 777  
 778 779 780  
 781 782 783  
 784 785 786  
 787 788 789

### Right Arrow Star Pattern

10 11 12 13  
 14 15 16 17  
 18 19 20  
 21  
 22  
 23 24 25  
 26 27 28 29  
 30 31 32 33

### Left Arrow Star Pattern

ABCDEFEDCBA  
 ABCDE EDCBA  
 ABCD DCBA  
 ABC CBA  
 AB BA  
 A A

Day 2	Write a program to check if a number is positive, negative, or zero
	Write a program to find the largest of three numbers
	Write a program to check if a year is a leap year
	Write a program to check if a character is a vowel or consonant
	Write a program to find if a triangle is valid based on angles or sides
	Write a program to check for a vowel or consonant using switch-case
	Write a program to perform unit conversion (e.g., cm to m, kg to g)
	Write a program to check for uppercase, lowercase, or special character
	Write a program to find the sum of the first N natural numbers
	Write a program to check if a number is prime
	Write a program to check if a number is a palindrome
	Write a program to check if a number is an Armstrong number
	Write a program to calculate the GCD and LCM of two numbers
	Write a program to find integers a, b such that $n = a^3 \times b$ , where b is cube-free
	Write a program to generate all prime numbers between 1 and N
Day 3	Write a program to find the factorial of a number
	Write a program to print Fibonacci sequence
	Write a program to find the sum of natural numbers
	Write a program to print the Nth term of Fibonacci series
	Write a program to print numbers from 1 to N
	Write a program to find the sum of digits of a number
	Write a program to print numbers from N to 1
	Write a program to find the power of two using recursion
	Write a program to count the digits in a number using recursion
	Write a program to reverse a string using recursion
	Write a program to check if a string is a palindrome using recursion
Day 4	Write a program to find the greatest common divisor (GCD)
	Write a program to perform binary search
	Write a program to find the second largest element in an array
	Write a program to check if an array is sorted
	Write a program to reverse an array
	Write a program to remove all the duplicate elements from an array
	Write a program to left rotate an array by d places
	Write a program to move all the zeros to the end
	Write a program to find leaders in an array
Day 5	Write a program to find the maximum difference
	Write a program to find the frequency in a sorted array
	Write a program to find the maximum consecutive 1's in a binary array
	Write a program to find the majority element in an array
	Write a program to find the maximum subarray sum
	Write a program to find the maximum or minimum sum of a subarray of size K
	Write a program to find a subarray with a given sum using the sliding window technique
	Write a program to find the maximum length even-odd subarray
	Write a program to find the sum of any subarray using the prefix sum array
	Write a program to find the equilibrium point

<b>Day 6</b>	Write a program to sort an array which consists of only 0, 1, and 2 without using sorting
	Write a program to find the union and intersection of two sorted arrays
	Write a program to find all pairs in an array whose sum is equal to a given number
	Write a program to find all elements that appear more than $n/k$ times in an array
	Write a program to find common elements in 3 sorted arrays
	Write a program to solve the chocolate distribution problem
<b>Day 7</b>	Write a program to check if the kth bit is set
	Write a program to count set bits
	Write a program to check if a number is a power of two
	Write a program to find the only odd occurring number
	Write a program to find two odd appearing numbers
	Write a program to find the missing number in an array
	Write a program to count the number of bits to be flipped to convert A to B
<b>Day 8</b>	Write a program to find the XOR of numbers from L to R
	Write a program to rearrange positive and negative integers alternatively in an array
	Write a program to create another array with the product of all elements except the ith element
	Write a program to find a peak element in an array
	Write a program to find if there is a pair with sum x in a sorted array
	Write a program to find a triplet in a sorted array
	Write a program to solve the trapping rain water problem
<b>Day 9</b>	Write a program to find the best time to buy and sell stock
	Write a program to print a matrix in a snake pattern
	Write a program to print boundary elements of a matrix
	Write a program to print the transpose of a matrix
	Write a program to rotate a matrix by 90 degrees
	Write a program to perform spiral traversal of a matrix
	Write a program to reverse a string
	Write a program to check whether a string is palindrome or not
	Write a program to find duplicate characters in a string