Competitive Programming (SoC'25)

Project id - 22
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Week 2 : Strings, Pattern Matching, Recursion, **Number Theory** (GCD, Sieve, Modular Arithmetic)

Theory:

(these are just resources you can always learn from youtube or other sources)

1. Strings
    a. https://www.geeksforgeeks.org/strings-in-cpp/
    b. https://cplusplus.com/reference/string/string/
2. Pattern matching
    a. https://www.geeksforgeeks.org/kmp-algorithm-for-pattern-searching/
    b. https://cp-algorithms.com/string/z-function.html
3. Recursion
    a. https://www.geeksforgeeks.org/introduction-to-recursion-2/
    b. https://www.geeksforgeeks.org/introduction-to-backtracking-2/
4. Number Theory
    a. https://www.geeksforgeeks.org/modular-arithmetic-for-competitive-programming/
    b. https://codeforces.com/blog/entry/72527
    c. https://cp-algorithms.com/algebra/module-inverse.html
    d. https://cp-algorithms.com/algebra/sieve-of-eratosthenes.html
    e. https://cp-algorithms.com/algebra/factorization.html
    f. https://cp-algorithms.com/algebra/binary-exp.html
    g. https://www.w3schools.com/dsa/dsa_ref_euclidean_algorithm.php
    h. https://cp-algorithms.com/algebra/euclid-algorithm.html
    i. https://cp-algorithms.com/algebra/extended-euclid-algorithm.html
    j. https://cp-algorithms.com/algebra/linear-diophantine-equation.html

Problems:

(increasing difficulty, maintain a git repo)

1. Strings and Pattern matching
    a. https://www.codechef.com/practice/course/strings/STRINGS/problems/DNASTORAGE (easy)
    b. https://codeforces.com/problemset/problem/1155/A
    c. https://codeforces.com/problemset/problem/1374/C
    d. https://leetcode.com/problems/reverse-words-in-a-string/description/
    e. https://codeforces.com/problemset/problem/1506/C
    f. Kmp- https://www.spoj.com/problems/NHAY/
    g. https://www.codechef.com/problems/FCTRL2 (yes! Its strings)

    h. Z- https://codeforces.com/contest/126/problem/B
2. Recursion and Backtracking
    a. https://leetcode.com/problems/subsets/description/ (classic)
    b. https://leetcode.com/problems/permutations/description/
    c. https://leetcode.com/problems/n-queens/description/
    d. https://leetcode.com/problems/sudoku-solver/description/
3. Number Theory

    Gcd
    a. https://codeforces.com/problemset/problem/1498/A
    b. https://codeforces.com/problemset/problem/1543/A
    c. https://cses.fi/problemset/task/1081/
    d. https://codeforces.com/problemset/problem/1183/B
    e. https://www.codechef.com/practice/course/number-theory/INTNT01/problems/STRNG
    f. https://codeforces.com/problemset/problem/1872/C
    g. https://codeforces.com/problemset/problem/633/B

    Modular
    a. https://codeforces.com/problemset/problem/913/A
    b. https://cses.fi/problemset/task/1095/
    c. https://codeforces.com/problemset/problem/1285/A

    Sieve of eratosthenes(prime numbers)
    a. https://cses.fi/problemset/task/2182/
    b. https://www.spoj.com/problems/PRIME1/
    c. https://codeforces.com/contest/26/problem/A
    d. https://codeforces.com/problemset/problem/17/A
    e. https://codeforces.com/contest/776/problem/B
    f. https://www.hackerrank.com/contests/projecteuler/challenges/euler134/problem
    g. https://projecteuler.net/problem=146
    h. https://codeforces.com/problemset/problem/154/B

    Diophantine- https://codeforces.com/problemset/problem/7/C