HackerRank Online Judge

Prepared by: Mohamed Ayman

Algorithm Engineer at Valeo

Deep Learning Researcher and Teaching Assistant

at The American University in Cairo (AUC)

spring 2020

sw.eng.MohamedAyman@gmail.com

facebook.com/cs.MohamedAyman

linkedin.com/in/cs-MohamedAyman

github.com/cs-MohamedAyman

codeforces.com/profile/Mohamed_Ayman

HackerRank Online Judge - Phase 2
Mathematics

Lecture Agenda

We will discuss in this lecture the following topics

1- Fundamentals	[20 problems]
2- Number Theory	[30 problems]
3- Combinatorics	[30 problems]
4- Algebra	[30 problems]
5- Geometry	[15 problems]
6- Probability	[15 problems]


Let's
START UP

Lecture Agenda

Section 1: Fundamentals

Section 2: Number Theory

Section 3: Combinatorics

Section 4: Algebra

Section 5: Geometry

Section 6: Probability

HackerRank - Fundamentals

[01] https://www.hackerrank.com/challenges/find-point
[02] https://www.hackerrank.com/challenges/maximum-draws/problem
[03] https://www.hackerrank.com/challenges/handshake/problem
[04] https://www.hackerrank.com/challenges/lowest-triangle/problem
[05] https://www.hackerrank.com/challenges/game-with-cells/problem
[06] https://www.hackerrank.com/challenges/leonardo-and-prime/problem
[07] https://www.hackerrank.com/challenges/connecting-towns/problem
[08] https://www.hackerrank.com/challenges/p1-paper-cutting/problem
[09] https://www.hackerrank.com/challenges/sherlock-and-moving-tiles/problem
[10] https://www.hackerrank.com/challenges/best-divisor/problem
[11] https://www.hackerrank.com/challenges/restaurant/problem
[12] https://www.hackerrank.com/challenges/reverse-game/problem
[13] https://www.hackerrank.com/challenges/strange-grid/problem
[14] https://www.hackerrank.com/challenges/sherlock-and-divisors/problem
[15] https://www.hackerrank.com/challenges/halloween-party/problem
[16] https://www.hackerrank.com/challenges/filling-jars/problem

HackerRank - Fundamentals

[17] https://www.hackerrank.com/challenges/harry-potter-and-the-floating-rocks/problem

[18] https://www.hackerrank.com/challenges/russian-peasant-exponentiation/problem

[19] https://www.hackerrank.com/challenges/most-distant/problem

[20] https://www.hackerrank.com/challenges/possible-path

Lecture Agenda

- ✔ Section 1: Fundamentals
- **Section 2: Number Theory**
- Section 3: Combinatorics
- Section 4: Algebra
- Section 5: Geometry
- Section 6: Probability

HackerRank - Number Theory

[01] https://www.hackerrank.com/challenges/constructing-a-number
[02] https://www.hackerrank.com/challenges/sherlock-and-gcd
[03] https://www.hackerrank.com/challenges/primitive-problem/problem
[04] https://www.hackerrank.com/challenges/identify-smith-numbers
[05] https://www.hackerrank.com/challenges/eulers-criterion
[06] https://www.hackerrank.com/challenges/fibonacci-finding-easy
[07] https://www.hackerrank.com/challenges/cheese-and-random-toppings/problem
[08] https://www.hackerrank.com/challenges/john-and-gcd-list/problem
[09] https://www.hackerrank.com/challenges/closest-number/problem
[10] https://www.hackerrank.com/challenges/twins/problem
[11] https://www.hackerrank.com/challenges/the-chosen-one/problem
[12] https://www.hackerrank.com/challenges/power-of-large-numbers/problem
[13] https://www.hackerrank.com/challenges/salary-blues/problem
[14] https://www.hackerrank.com/challenges/number-of-subsets/problem
[15] https://www.hackerrank.com/challenges/breaking-sticks/problem
[16] https://www.hackerrank.com/challenges/easy-gcd-1/problem

HackerRank - Number Theory

[17] https://www.hackerrank.com/challenges/manasa-loves-maths/problem
[18] https://www.hackerrank.com/challenges/easy-math/problem
[19] https://www.hackerrank.com/challenges/equations/problem
[20] https://www.hackerrank.com/challenges/binomial-coefficients/problem
[21] https://www.hackerrank.com/challenges/lucy-and-flowers/problem
[22] https://www.hackerrank.com/challenges/a-weird-function/problem
[23] https://www.hackerrank.com/challenges/arthur-and-coprimes/problem
[24] https://www.hackerrank.com/challenges/megaprime-numbers/problem
[25] https://www.hackerrank.com/challenges/ants/problem
[26] https://www.hackerrank.com/challenges/ichigo-and-cubes/problem
[27] https://www.hackerrank.com/challenges/prime-sum/problem
[28] https://www.hackerrank.com/challenges/hyperrectangle-gcd/problem
[29] https://www.hackerrank.com/challenges/ichigo-and-rooms/problem
[30] https://www.hackerrank.com/challenges/ajob-subsequence/problem
[31] https://www.hackerrank.com/challenges/matrix-tree/problem
[32] https://www.hackerrank.com/challenges/niceclique/problem
[33] https://www.hackerrank.com/challenges/down-the-rabbit-hole/problem

Lecture Agenda

- ✔ Section 1: Fundamentals
- ✔ Section 2: Number Theory
- **Section 3: Combinatorics**
- Section 4: Algebra
- Section 5: Geometry
- Section 6: Probability

HackerRank - Combinatorics

[01] https://www.hackerrank.com/challenges/a-chocolate-fiesta/problem
[02] https://www.hackerrank.com/challenges/picking-cards/problem
[03] https://www.hackerrank.com/challenges/ncr-table/problem
[04] https://www.hackerrank.com/challenges/coinage/problem
[05] https://www.hackerrank.com/challenges/building-a-list/problem
[06] https://www.hackerrank.com/challenges/merge-list/problem
[07] https://www.hackerrank.com/challenges/choose-and-calculate/problem
[08] https://www.hackerrank.com/challenges/sherlock-and-pairs/problem
[09] https://www.hackerrank.com/challenges/consecutive-subsequences/problem
[10] https://www.hackerrank.com/challenges/antipalindromic-strings/problem
[11] https://www.hackerrank.com/challenges/lexicographic-steps/problem
[12] https://www.hackerrank.com/challenges/number-list/problem
[13] https://www.hackerrank.com/challenges/ajourney/problem
[14] https://www.hackerrank.com/challenges/super-humble-matrix/problem
[15] https://www.hackerrank.com/challenges/volleyball-match/problem
[16] https://www.hackerrank.com/challenges/cyclicquadruples/problem

HackerRank - Combinatorics

[17] https://www.hackerrank.com/challenges/game-of-throne-ii/problem
[18] https://www.hackerrank.com/challenges/digit-products/problem
[19] https://www.hackerrank.com/challenges/tower-3-coloring/problem
[20] https://www.hackerrank.com/challenges/count-fox-sequences/problem
[21] https://www.hackerrank.com/challenges/manasa-and-combinatorics/problem
[22] https://www.hackerrank.com/challenges/coloring-grid/problem
[23] https://www.hackerrank.com/challenges/div-and-span/problem
[24] https://www.hackerrank.com/challenges/ichigo-and-revenge/problem
[25] https://www.hackerrank.com/challenges/bincoefrevenge/problem
[26] https://www.hackerrank.com/challenges/circles-math/problem
[27] https://www.hackerrank.com/challenges/costly-graphs/problem
[28] https://www.hackerrank.com/challenges/bridges-and-harbors/problem

Lecture Agenda

- ✔ Section 1: Fundamentals
- ✔ Section 2: Number Theory
- ✔ Section 3: Combinatorics
- **Section 4: Algebra**
- Section 5: Geometry
- Section 6: Probability

HackerRank - Algebra

[01] https://www.hackerrank.com/challenges/difference-and-product/problem
[02] https://www.hackerrank.com/challenges/pythagorean-triple/problem
[03] https://www.hackerrank.com/challenges/number-groups/problem
[04] https://www.hackerrank.com/challenges/wet-shark-and-42/problem
[05] https://www.hackerrank.com/challenges/simple-one/problem
[06] https://www.hackerrank.com/challenges/stepping-stones-game/problem
[07] https://www.hackerrank.com/challenges/shashank-and-list/problem
[08] https://www.hackerrank.com/challenges/triangle-numbers/problem
[09] https://www.hackerrank.com/challenges/little-gaurav-and-sequence/problem
[10] https://www.hackerrank.com/challenges/tell-the-average/problem
[11] https://www.hackerrank.com/challenges/game-of-rotation/problem
[12] https://www.hackerrank.com/challenges/hackonacci-matrix-rotations/problem
[13] https://www.hackerrank.com/challenges/the-triplets/problem
[14] https://www.hackerrank.com/challenges/manasa-and-sub-sequences/problem
[15] https://www.hackerrank.com/challenges/count-solutions/problem
[16] https://www.hackerrank.com/challenges/manasa-and-calculations/problem

HackerRank - Algebra

[17] https://www.hackerrank.com/challenges/the-simplest-sum/problem
[18] https://www.hackerrank.com/challenges/manasa-and-pizza/problem
[19] https://www.hackerrank.com/challenges/permutation-equations/problem
[20] https://www.hackerrank.com/challenges/introduction-to-algebra/problem
[21] https://www.hackerrank.com/challenges/cross-matrix/problem
[22] https://www.hackerrank.com/challenges/linear-algebra-foundations-1/problem
[23] https://www.hackerrank.com/challenges/linear-algebra-foundations-1-matrix-subtraction/problem
[24] https://www.hackerrank.com/challenges/linear-algebra-foundations-3-matrix-multiplication/problem
[25] https://www.hackerrank.com/challenges/linear-algebra-foundations-4-matrix-multiplication/problem
[26] https://www.hackerrank.com/challenges/linear-algebra-foundations-5-the-100th-power-of-a-matrix/problem
[27] https://www.hackerrank.com/challenges/linear-algebra-foundations-6-the-nsupthsup-power-of-a-matrix/problem
[28] https://www.hackerrank.com/challenges/linear-algebra-fundamentals-10-eigenvectors/problem
[29] https://www.hackerrank.com/challenges/determinant-of-the-matrix-1/problem
[30] https://www.hackerrank.com/challenges/determinant-of-the-matrix-3/problem

Lecture Agenda

- ✔ Section 1: Fundamentals
- ✔ Section 2: Number Theory
- ✔ Section 3: Combinatorics
- ✔ Section 4: Algebra
- **Section 5: Geometry**
- Section 6: Probability

HackerRank - Geometry

[01] https://www.hackerrank.com/challenges/points-on-a-line/problem
[02] https://www.hackerrank.com/challenges/rectangular-game/problem
[03] https://www.hackerrank.com/challenges/sherlock-and-counting/problem
[04] https://www.hackerrank.com/challenges/sherlock-and-planes/problem
[05] https://www.hackerrank.com/challenges/xrange-and-pizza/problem
[06] https://www.hackerrank.com/challenges/points-on-rectangle/problem
[07] https://www.hackerrank.com/challenges/circle-city/problem
[08] https://www.hackerrank.com/challenges/spheres/problem
[09] https://www.hackerrank.com/challenges/baby-step-giant-step/problem
[10] https://www.hackerrank.com/challenges/a-circle-and-a-square/problem
[11] https://www.hackerrank.com/challenges/hyperspace-travel/problem
[12] https://www.hackerrank.com/challenges/solve-equations/problem
[13] https://www.hackerrank.com/challenges/stars/problem
[14] https://www.hackerrank.com/challenges/polar-angles/problem
[15] https://www.hackerrank.com/challenges/jim-and-the-challenge/problem

Lecture Agenda

- ✔ Section 1: Fundamentals
- ✔ Section 2: Number Theory
- ✔ Section 3: Combinatorics
- ✔ Section 4: Algebra
- ✔ Section 5: Geometry
- **Section 6: Probability**

HackerRank - Probability

[01] https://www.hackerrank.com/challenges/random-number-generator/problem
[02] https://www.hackerrank.com/challenges/bday-gift/problem
[03] https://www.hackerrank.com/challenges/normal-distribution-1/problem
[04] https://www.hackerrank.com/challenges/normal-distribution-2/problem
[05] https://www.hackerrank.com/challenges/vertical-sticks/problem
[06] https://www.hackerrank.com/challenges/extremely-dangerous-virus/problem
[07] https://www.hackerrank.com/challenges/matchstick-experiment/problem
[08] https://www.hackerrank.com/challenges/palindromes/problem
[09] https://www.hackerrank.com/challenges/lazy-sorting/problem
[10] https://www.hackerrank.com/challenges/binomial-distribution-1/problem
[11] https://www.hackerrank.com/challenges/binomial-distribution-1/problem
[12] https://www.hackerrank.com/challenges/the-white-lotus-and-caterpillar-game/problem
[13] https://www.hackerrank.com/challenges/dice-stats/problem
[14] https://www.hackerrank.com/challenges/james-tree/problem
[15] https://www.hackerrank.com/challenges/colorful-polygon/problem

Lecture Agenda

- ✔ Section 1: Fundamentals
- ✔ Section 2: Number Theory
- ✔ Section 3: Combinatorics
- ✔ Section 4: Algebra
- ✔ Section 5: Geometry
- ✔ Section 6: Probability


DO
MORE.