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 3
Algorithms Dynamic Programming

Lecture Agenda

We will discuss in this lecture the following topics

1- Bit Manipulation [25 problems]

2- Dynamic Programming [100 problems]

3- Constructive Algorithms [10 problems]


Let's
START UP

Lecture Agenda

Section 1: Bit Manipulation

Section 2: Dynamic Programming

Section 3: Constructive Algorithms

HackerRank - Bit Manipulation

[01] https://www.hackerrank.com/challenges/lonely-integer/problem
[02] https://www.hackerrank.com/challenges/maximizing-xor/problem
[03] https://www.hackerrank.com/challenges/sum-vs-xor/problem
[04] https://www.hackerrank.com/challenges/flipping-bits/problem
[05] https://www.hackerrank.com/challenges/counter-game/problem
[06] https://www.hackerrank.com/challenges/xor-se/problem
[07] https://www.hackerrank.com/challenges/the-great-xor/problem
[08] https://www.hackerrank.com/challenges/yet-another-minimax-problem/problem
[09] https://www.hackerrank.com/challenges/sansa-and-xor/problem
[10] https://www.hackerrank.com/challenges/and-product/problem
[11] https://www.hackerrank.com/challenges/winning-lottery-ticket/problem
[12] https://www.hackerrank.com/challenges/cipher/problem
[13] https://www.hackerrank.com/challenges/whats-next/problem
[14] https://www.hackerrank.com/challenges/aorb/problem
[15] https://www.hackerrank.com/challenges/xoring-ninja/problem
[16] https://www.hackerrank.com/challenges/xor-matrix/problem

HackerRank - Bit Manipulation

[17] https://www.hackerrank.com/challenges/string-transmission/problem
[18] https://www.hackerrank.com/challenges/manipulative-numbers/problem
[19] https://www.hackerrank.com/challenges/stonegame/problem
[20] https://www.hackerrank.com/challenges/maximizing-the-function/problem
[21] https://www.hackerrank.com/challenges/pmix/problem
[22] https://www.hackerrank.com/challenges/2s-complement/problem
[23] https://www.hackerrank.com/challenges/changing-bits/problem
[24] https://www.hackerrank.com/challenges/xor-key/problem
[25] https://www.hackerrank.com/challenges/xor-subsequence/problem
[26] https://www.hackerrank.com/challenges/iterate-it/problem
[27] https://www.hackerrank.com/challenges/hamming-distance/problem

Lecture Agenda

- ✔ Section 1: Bit Manipulation
- **Section 2: Dynamic Programming**
- Section 3: Constructive Algorithms

HackerRank - Dynamic Programming

[01] https://www.hackerrank.com/challenges/coin-change/problem
[02] https://www.hackerrank.com/challenges/equal/problem
[03] https://www.hackerrank.com/challenges/sherlock-and-cost/problem
[04] https://www.hackerrank.com/challenges/construct-the-array/problem
[05] https://www.hackerrank.com/challenges/kingdom-division/problem
[06] https://www.hackerrank.com/challenges/sam-and-substrings/problem
[07] https://www.hackerrank.com/challenges/fibonacci-modified/problem
[08] https://www.hackerrank.com/challenges/abbr/problem
[09] https://www.hackerrank.com/challenges/prime-xor/problem
[10] https://www.hackerrank.com/challenges/fair-cut/problem
[11] https://www.hackerrank.com/challenges/maxsubarray/problem
[12] https://www.hackerrank.com/challenges/prime-digit-sums/problem
[13] https://www.hackerrank.com/challenges/hr-city/problem
[14] https://www.hackerrank.com/challenges/summing-pieces/problem
[15] https://www.hackerrank.com/challenges/mr-k-marsh/problem
[16] https://www.hackerrank.com/challenges/substring-diff/problem
[17] https://www.hackerrank.com/challenges/xor-and-sum/problem

HackerRank - Dynamic Programming

[18] https://www.hackerrank.com/challenges/lego-blocks/problem
[19] https://www.hackerrank.com/challenges/stockmax/problem
[20] https://www.hackerrank.com/challenges/two-robots/problem
[21] https://www.hackerrank.com/challenges/cuttree/problem
[22] https://www.hackerrank.com/challenges/wet-shark-and-two-subsequences/problem
[23] https://www.hackerrank.com/challenges/array-splitting/problem
[24] https://www.hackerrank.com/challenges/mandragora/problem
[25] https://www.hackerrank.com/challenges/red-john-is-back/problem
[26] https://www.hackerrank.com/challenges/tutzki-and-lcs/problem
[27] https://www.hackerrank.com/challenges/grid-walking/problem
[28] https://www.hackerrank.com/challenges/unbounded-knapsack/problem
[29] https://www.hackerrank.com/challenges/play-game/problem
[30] https://www.hackerrank.com/challenges/coin-on-the-table/problem
[31] https://www.hackerrank.com/challenges/dynamic-programming-classics-the-longest-common-subsequence/problem
[32] https://www.hackerrank.com/challenges/strplay/problem
[33] https://www.hackerrank.com/challenges/counting-special-sub-cubes/problem
[34] https://www.hackerrank.com/challenges/interval-selection/problem

HackerRank - Dynamic Programming

[35] https://www.hackerrank.com/challenges/the-indian-job/problem
[36] https://www.hackerrank.com/challenges/travel-around-the-world/problem
[37] https://www.hackerrank.com/challenges/candles-2/problem
[38] https://www.hackerrank.com/challenges/swappermutation/problem
[39] https://www.hackerrank.com/challenges/extremum-permutations/problem
[40] https://www.hackerrank.com/challenges/decibinary-numbers/problem
[41] https://www.hackerrank.com/challenges/angry-children-2/problem
[42] https://www.hackerrank.com/challenges/sherlocks-array-merging-algorithm/problem
[43] https://www.hackerrank.com/challenges/brick-tiling/problem
[44] https://www.hackerrank.com/challenges/alien-languages/problem
[45] https://www.hackerrank.com/challenges/taras-beautiful-permutations/problem
[46] https://www.hackerrank.com/challenges/choosing-white-balls/problem
[47] https://www.hackerrank.com/challenges/matrix-land/problem
[48] https://www.hackerrank.com/challenges/black-n-white-tree-1/problem
[49] https://www.hackerrank.com/challenges/string-reduction/problem
[50] https://www.hackerrank.com/challenges/far-vertices/problem
[51] https://www.hackerrank.com/challenges/superman-celebrates-diwali/problem

HackerRank - Dynamic Programming

[52] https://www.hackerrank.com/challenges/hexagonal-grid/problem
[53] https://www.hackerrank.com/challenges/queens-on-board/problem
[54] https://www.hackerrank.com/challenges/turn-off-the-lights/problem
[55] https://www.hackerrank.com/challenges/animal-transport/problem
[56] https://www.hackerrank.com/challenges/a-super-hero/problem
[57] https://www.hackerrank.com/challenges/clues-on-a-binary-path/problem
[58] https://www.hackerrank.com/challenges/road-maintenance/problem
[59] https://www.hackerrank.com/challenges/beautiful-string/problem
[60] https://www.hackerrank.com/challenges/covering-the-stains/problem
[61] https://www.hackerrank.com/challenges/gcd-matrix/problem
[62] https://www.hackerrank.com/challenges/newyear-present/problem
[63] https://www.hackerrank.com/challenges/longest-palindromic-subsequence/problem
[64] https://www.hackerrank.com/challenges/square-subsequences/problem
[65] https://www.hackerrank.com/challenges/police-operation/problem
[66] https://www.hackerrank.com/challenges/zurikela/problem
[67] https://www.hackerrank.com/challenges/longest-mod-path/problem
[68] https://www.hackerrank.com/challenges/p-sequences/problem

HackerRank - Dynamic Programming

[69] https://www.hackerrank.com/challenges/oil-well/problem
[70] https://www.hackerrank.com/challenges/ones-and-twos/problem
[71] https://www.hackerrank.com/challenges/hard-drive-disks/problem
[72] https://www.hackerrank.com/challenges/longest-increasing-subsequent/problem
[73] https://www.hackerrank.com/challenges/shashank-and-palindromic-strings/problem
[74] https://www.hackerrank.com/challenges/points-in-a-plane/problem
[75] https://www.hackerrank.com/challenges/requirement/problem
[76] https://www.hackerrank.com/challenges/billboards/problem
[77] https://www.hackerrank.com/challenges/fairy-chess/problem
[78] https://www.hackerrank.com/challenges/hyper-strings/problem
[79] https://www.hackerrank.com/challenges/dorsey-thief/problem
[80] https://www.hackerrank.com/challenges/mining/problem
[81] https://www.hackerrank.com/challenges/modify-the-sequence/problem
[82] https://www.hackerrank.com/challenges/robot/problem
[83] https://www.hackerrank.com/challenges/unfair-game/problem
[84] https://www.hackerrank.com/challenges/find-the-seed/problem
[85] https://www.hackerrank.com/challenges/the-blacklist/problem

HackerRank - Dynamic Programming

[86] https://www.hackerrank.com/challenges/tree-pruning/problem
[87] https://www.hackerrank.com/challenges/vim-war/problem
[88] https://www.hackerrank.com/challenges/best-spot/problem
[89] https://www.hackerrank.com/challenges/unique-divide-and-conquer
[90] https://www.hackerrank.com/challenges/dortmund-dilemma
[91] https://www.hackerrank.com/challenges/super-kth-lis
[92] https://www.hackerrank.com/challenges/counting-road-networks/problem
[93] https://www.hackerrank.com/challenges/suffix-rotation/problem
[94] https://www.hackerrank.com/challenges/lucky-numbers/problem
[95] https://www.hackerrank.com/challenges/count-scorecards/problem
[96] https://www.hackerrank.com/challenges/divisible-numbers/problem
[97] https://www.hackerrank.com/challenges/happy-king/problem
[98] https://www.hackerrank.com/challenges/count-ways-1/problem
[99] https://www.hackerrank.com/challenges/hard-drive-disks/problem
[100] https://www.hackerrank.com/challenges/separate-the-chocolate/problem

Lecture Agenda

- ✔ Section 1: Bit Manipulation
- ✔ Section 2: Dynamic Programming
- Section 3: Constructive Algorithms

HackerRank - Constructive Algorithms

[01] https://www.hackerrank.com/challenges/lena-sort/problem
[02] https://www.hackerrank.com/challenges/flipping-the-matrix/problem
[03] https://www.hackerrank.com/challenges/an-interesting-game-1/problem
[04] https://www.hackerrank.com/challenges/new-year-chaos/problem
[05] https://www.hackerrank.com/challenges/bonetrousle/problem
[06] https://www.hackerrank.com/challenges/kmp-problem/problem
[07] https://www.hackerrank.com/challenges/beautiful-3-set/problem
[08] https://www.hackerrank.com/challenges/inverse-rmq/problem
[09] https://www.hackerrank.com/challenges/lovely-triplets/problem
[10] https://www.hackerrank.com/challenges/array-construction/problem
[11] https://www.hackerrank.com/challenges/two-subarrays/problem

Lecture Agenda

- ✔ Section 1: Bit Manipulation
- ✔ Section 2: Dynamic Programming
- ✔ Section 3: Constructive Algorithms


DO
MORE.