Algorithms Checklist

Progress: 42/314 (13.4%)

A comprehensive collection of algorithm implementations

Backtracking (20%)

- ☐ all combination of size k
- ☑ graph coloring
- ☐ hamiltonian cycle
- ☐ knight tour
- ☐ n queens
- ☑ parentheses generator
- ☐ permutations
- ☐ rat in a maze
- ☐ subset sum
- ☐ sudoku

Big Integer (33.3%)

- ☑ fast factorial
- ☐ multiply
- ☐ poly1305

Bit Manipulation (50%)

- ☑ counting bits
- ☑ highest set bit
- ☐ n bits gray code
- ☐ sum of two integers

Ciphers (23.8%)

- ☐ aes
- ☑ baconian cipher
- ☐ base64
- ☐ blake2b
- ☑ caesar
- ☐ chacha
- ☐ diffie hellman
- ☐ hashing traits
- ☐ kerninghan
- ☑ morse code
- ☐ polybius
- ☐ RAIL fence
- ☑ rot13
- ☐ salsa
- ☐ sha256
- ☐ sha3
- ☐ tea
- ☐ theoretical rot13
- ☐ transposition
- ☐ vigenere
- ☑ xor

Compression (50%)

- ☑ move to front
- ☐ run length encoding

Conversions (20%)

- ☑ binary to decimal
- ☑ binary to hexadecimal
- ☐ decimal to binary
- ☐ decimal to hexadecimal
- ☐ hexadecimal to binary
- ☐ hexadecimal to decimal
- ☐ length conversion
- ☐ octal to binary
- ☐ octal to decimal
- ☐ rgb cmyk conversion

Data Structures (5%)

- ☐ avl tree
- ☐ binary search tree
- ☐ b tree
- ☐ fenwick tree
- ☐ floyds algorithm
- ☐ graph
- ☐ hash table
- ☐ heap
- ☐ lazy segment tree
- ☐ linked list
- ☐ queue
- ☐ range minimum query
- ☐ rb tree
- ☐ segment tree recursive
- ☐ segment tree
- ☑ stack using singly linked list
- ☐ treap
- ☐ trie

- [ ] union find
- [ ] veb tree

Probabilistic

- [ ] bloom filter
- [ ] count min sketch

Dynamic Programming (5%)

- [ ] coin change
- [ ] egg dropping
- [x] fibonacci
- [ ] fractional knapsack
- [ ] is subsequence
- [ ] knapsack
- [ ] longest common subsequence
- [ ] longest common substring
- [ ] longest continuous increasing subsequence
- [ ] longest increasing subsequence
- [ ] matrix chain multiply
- [ ] maximal square
- [ ] maximum subarray
- [ ] minimum cost path
- [ ] optimal bst
- [ ] rod cutting
- [ ] snail
- [ ] subset generation
- [ ] trapped rainwater
- [ ] word break

Financial (100%)

- [x] present value

General (11.1%)

- [ ] convex hull
- [ ] fisher yates shuffle
- [ ] genetic
- [ ] hanoi
- [ ] huffman encoding
- [ ] kadane algorithm
- [ ] kmeans
- [ ] mex
- [x] two sum

Permutation

- [ ] heap
- [ ] naive
- [ ] steinhaus johnson trotter

Geometry (28.6%)

- [ ] closest points
- [ ] graham scan
- [ ] jarvis scan
- [x] point
- [ ] polygon points
- [ ] ramer douglas peucker
- [x] segment

Graph (0%)

- [ ] astar
- [ ] bellman ford
- [ ] bipartite matching
- [ ] breadth first search
- [ ] centroid decomposition
- [ ] decremental connectivity
- [ ] depth first search
- [ ] depth first search tic tac toe
- [ ] detect cycle
- [ ] dijkstra
- [ ] dinic maxflow
- [ ] disjoint set union
- [ ] eulerian path
- [ ] floyd warshall
- [ ] ford fulkerson
- [ ] graph enumeration
- [ ] heavy light decomposition
- [ ] kosaraju
- [ ] lee breadth first search
- [ ] lowest common ancestor
- [ ] minimum spanning tree
- [ ] prim
- [ ] strongly connected components
- [ ] tarjans ssc
- [ ] topological sort
- [ ] two satisfiability

Greedy (0%)

- [ ] job sequencing
- [ ] stable matching

Machine Learning (25%)

- [ ] cholesky
- [ ] k means
- [x] linear regression
- [ ] logistic regression

Loss Function

- ☐ average margin ranking loss
- ☐ hinge loss
- ☐ huber loss
- ☐ kl divergence loss
- ☑ mean absolute error loss
- ☑ mean squared error loss
- ☐ negative log likelihood

Optimization

- ☐ adam
- ☐ gradient descent

Math (19.3%)

- ☑ abs
- ☑ aliquot sum
- ☐ amicable numbers
- ☑ area of polygon
- ☑ area under curve
- ☐ armstrong number
- ☑ average
- ☐ baby step giant step
- ☐ bell numbers
- ☐ binary exponentiation
- ☐ binomial coefficient
- ☐ catalan numbers
- ☐ ceil
- ☐ chinese remainder theorem
- ☐ collatz sequence
- ☐ combinations
- ☐ cross entropy loss
- ☐ decimal to fraction
- ☑ doomsday
- ☐ elliptic curve
- ☐ euclidean distance
- ☐ exponential linear unit
- ☐ extended euclidean algorithm
- ☐ factorial
- ☐ factors
- ☐ faster perfect numbers
- ☐ fast fourier transform
- ☐ fast power
- ☐ field
- ☐ frizzy number
- ☐ gaussian elimination
- ☐ gaussian error linear unit
- ☐ gcd of n numbers
- ☐ geometric series
- ☐ greatest common divisor
- ☐ huber loss
- ☐ infix to postfix
- ☐ interest
- ☐ interpolation
- ☐ interquartile range
- ☐ karatsuba multiplication
- ☐ lcm of n numbers
- ☐ leaky relu
- ☐ least square approx
- ☐ linear sieve
- ☐ logarithm
- ☐ lucas series
- ☐ matrix ops
- ☐ mersenne primes
- ☐ miller rabin

- [ ] modular exponential
- [ ] newton raphson
- [ ] nthprime
- [ ] pascal triangle
- [ ] perfect cube
- [ ] perfect numbers
- [x] perfect square
- [ ] pollard rho
- [ ] postfix evaluation
- [x] prime check
- [x] prime factors
- [ ] prime numbers
- [ ] quadratic residue
- [ ] random
- [x] relu
- [x] sieve of eratosthenes
- [x] sigmoid
- [ ] signum
- [ ] simpsons integration
- [ ] softmax
- [ ] sprague grundy theorem
- [x] square pyramidal numbers
- [x] square root
- [x] sum of digits
- [ ] sum of geometric progression
- [ ] sum of harmonic series
- [ ] sylvester sequence
- [x] tanh
- [ ] trapezoidal integration
- [ ] trial division
- [ ] trig functions
- [ ] vector cross product
- [ ] zellers congruence algorithm

Navigation (0%)

- [ ] bearing
- [ ] haversine

Number Theory (0%)

- [ ] compute totient
- [ ] euler totient
- [ ] kth factor

Searching (13.3%)

- [ ] binary search recursive
- [x] binary search
- [ ] exponential search
- [ ] fibonacci search
- [ ] interpolation search
- [ ] jump search
- [ ] kth smallest heap
- [x] linear search
- [ ] moore voting
- [ ] quick select
- [ ] saddleback search
- [ ] ternary search min max recursive
- [ ] ternary search min max
- [ ] ternary search recursive
- [ ] ternary search

Sorting (5.9%)

- [ ] bead sort
- [ ] binary insertion sort
- [ ] bingo sort
- [ ] bitonic sort
- [x] bogo sort
- [x] bubble sort
- [ ] bucket sort
- [ ] cocktail shaker sort
- [ ] comb sort
- [ ] counting sort
- [ ] cycle sort
- [ ] dutch national flag sort
- [ ] exchange sort
- [ ] gnome sort
- [ ] heap sort
- [ ] insertion sort
- [ ] intro sort
- [ ] merge sort
- [ ] odd even sort
- [ ] pancake sort
- [ ] patience sort
- [ ] pigeonhole sort
- [ ] quick sort 3 ways
- [ ] quick sort
- [ ] radix sort
- [ ] selection sort
- [ ] shell sort
- [ ] sleep sort
- [ ] sort utils
- [ ] stooge sort
- [ ] tim sort
- [ ] tree sort
- [ ] wave sort
- [ ] wiggle sort

String (0%)

- [ ] aho corasick
- [ ] anagram

- [ ] autocomplete using trie
- [ ] boyer moore search
- [ ] burrows wheeler transform
- [ ] duval algorithm
- [ ] hamming distance
- [ ] isogram
- [ ] isomorphism
- [ ] jaro winkler distance
- [ ] knuth morris pratt
- [ ] levenshtein distance
- [ ] lipogram
- [ ] manacher
- [ ] palindrome
- [ ] pangram
- [ ] rabin karp
- [ ] reverse
- [ ] run length encoding
- [ ] shortest palindrome
- [ ] suffix array manber myers
- [ ] suffix array
- [ ] suffix tree
- [ ] z algorithm