

Data Structures and Algorithms

tutorial

algorithm

algorithms

data-structure

datastructure

neo1tech9_7 #1 August 6, 2019, 8:42am

Moving forward, this list will be updated [here](#).

1. Binary Search :

[Tutorial](#), [Problems](#), [Tutorial](#), [Implementation](#), [Problem](#)

2. Quicksort :

[Tutorial](#), [Implementation](#), [Tutorial](#)

3. Merge Sort :

[Tutorial](#), [Implementation](#), [Tutorial](#)

4. Suffix Array :

[Tutorial](#), [Tutorial](#), [Implementation](#), [Tutorial](#), [Implementation](#), [Problem](#), [Problem](#)

5. Knuth-Morris-Pratt Algorithm (KMP) :

[Tutorial](#), [Tutorial](#), [Implementation](#), [Tutorial](#), [Problem](#)

6. Rabin-Karp Algorithm :

[Tutorial](#), [Implementation](#), [Tutorial](#), [Problem](#), [Problem](#)

7. Tries :

[Tutorial](#), [Problems](#), [Tutorial : I, II](#), [Tutorial](#), [Problem](#), [Problem](#), [Problem](#)

8. Depth First Traversal of a graph :

[Tutorial](#), [Implementation](#), [Tutorial](#), [Problems](#), [Problem](#), [Problem](#), [Problem](#)

9. Breadth First Traversal of a graph :

[Tutorial](#), [Implementation](#), [Tutorial](#), [Problems](#), [Problem](#), [Problem](#), [Problem](#), [Flood Fill](#)

10. Dijkstra's Algorithm :

[Tutorial](#), [Problems](#), [Problem](#), [Tutorial\(greedy\)](#), [Tutorial \(with heap\)](#), [Implementation](#), [Problem](#), [Problem](#)

11. Binary Indexed Tree :

[Tutorial](#), [Problems](#), [Tutorial](#), [Original Paper](#), [Tutorial](#), [Tutorial](#), [Problem](#), [Problem](#), [Problem](#), [Problem](#), [Problem](#), [Problem](#)

12. Segment Tree (with lazy propagation) :

[Tutorial](#), [Implementation](#), [Tutorial](#), [Tutorial](#), [Problems](#), [Implementation](#), [Tutorial](#), [Implementation and Various Uses](#), Persistent Segment Tree: [*62, II](#), problems same as BIT, [Problem](#), [Problem](#)/[HLD is used as well](#)

13. Z algorithm :

[Tutorial](#), [Problem](#), [Tutorial](#), [Tutorial](#), problems same as KMP.

14. Floyd Warshall Algorithm :

[Tutorial](#), [Implementation](#), [Problem](#), [Problem](#)

15. Sparse Table (LCP, RMQ) :

[Tutorial](#), [Problems](#), [Tutorial](#), [Implementation\(C++\)](#), [Java implementation](#)

16. Heap / Priority Queue / Heapsort :

[Implementation](#), [Explanation](#), [Tutorial](#), [Implementation](#), [Problem](#), Chapter from CLRS

17. [Modular Multiplicative Inverse](#)

18. Binomial coefficients ($nCr \ % \ M$): [Tutorial](#), [Tutorial](#), [Paper](#) (Link Not Working), [Problem](#)

19. Suffix Automaton :

[Detailed Paper](#), [Tutorial](#), [Implementation \(I\)](#), [Tutorial](#), [Implementation \(II\)](#), [Problem](#), [Problem](#), [Problem](#), [Tutorial](#), [Implementation](#)

20. Lowest Common Ancestor :

[Tutorial](#), [Problems](#), [Paper](#), [Paper](#), [Problem](#), [Problem](#), [Problem](#)

21. Counting Inversions :

[Divide and Conquer](#), [Segment Tree](#), [Fenwick Tree](#), [Problem](#)

22. [Euclid's Extended Algorithm](#)

23. Suffix Tree :

[Tutorial](#), [Tutorial](#), [Intro](#), Construction : *[106](#), [II](#), [Implementation](#), [Implementation](#), [Problem](#), [Problem](#), [Problem](#)

24. Dynamic Programming :

Chapter from CLRS(essential), [Tutorial](#), [Problems](#), [Problem](#), [Problem](#), [Problem](#), [Problem](#), [Problem](#), [Tutorial](#), [Problem](#), [Problem](#), [Problem](#), [Longest Increasing Subsequence](#), [Bitmask DP](#), [Bitmask DP](#), [Optimization](#), [Problem](#), [Problem](#), [Problem](#), [Problem](#), [Problem](#), [Problem](#), [Problem](#), [Problem](#), [DP on Trees](#) : *[134](#), [II](#)

25. Basic Data Structures :

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26. [Logarithmic Exponentiation](#)

27. Graphs :

[Definition](#), [Representation](#), [Definition](#), [Representation](#), [Problem](#), [Problem](#)

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29. [Efficient Prime Factorization](#)

30. Combinatorics :

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31. Union Find/Disjoint Set :

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32. Knapsack problem :

[Solution](#), [Implementation](#)

33. Aho-Corasick String Matching Algorithm :

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34. Strongly Connected Components :

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35. Bellman Ford algorithm :

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36. Heavy-light Decomposition :

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37. Convex Hull :

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38. Line Intersection :

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39. [Sieve of Erastothenes](#)

40. Interval Tree :

[Tutorial](#), [Implementation](#), [Problem](#), [Problem](#), [Problem](#), [Problem](#), [Problem](#), [Problem](#),
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41. [Counting Sort](#)

42. [Probabilities](#)

43. Matrix Exponentiation :

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44. Network flow :

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[Tutorial](#), [Implementation](#), (Min Cost Flow) [Tutorial](#) : I, II, III, Dinic's Algorithm with
[Implementation](#), Max flow by Edmonds Karp with [Implementation](#), [Problem](#), [Problem](#),
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45. K-d tree :

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47. Binary Search Tree :

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48. Quick Select :

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49. Treap/Cartesian Tree :

[Tutorial\(detailed\)](#), [Tutorial](#), [Implementation](#), [Uses and Problems](#), [Problem](#), [Problem](#)

50. Game Theory :

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51. STL (C++) :

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52. [Maximum Bipartite Matching](#)

53. Manacher's Algorithm :

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54. [Miller-Rabin Primality Test](#) : [Code](#)

55. [Stable Marriage Problem](#)

56. [Hungarian Algorithm](#), [Tutorial](#)

57. [Sweep line Algorithm](#) : [I](#), [II](#)

58. LCP :

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59. [Gaussian Elimination](#)

60. [Pollard Rho Integer Factorization](#), [problem](#)

61. [Topological Sorting](#)

62. Detecting Cycles in a Graph : Directed - *[293](#), [II](#)

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63. Geometry : [Basics](#), [Tutorial](#)

64. Backtracking :

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65. Eulerian and Hamiltonian Paths :

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66. Graph Coloring :

[Tutorial](#), [Implementation](#)

67. Meet in the Middle :

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68. [Arbitrary Precision Integer\(BigInt\)](#), II

69. [Radix Sort](#), [Bucket Sort](#)

70. Johnson's Algorithm :

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71. Maximal Matching in a General Graph :

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72. Recursion : [I](#), [II](#), [Towers of Hanoi](#) with explanation

73. [Inclusion and Exclusion Principle](#) : [I](#), [II](#)

74. [Co-ordinate Compression](#)

75. Sqrt-Decomposition :

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76. Link-Cut Tree :

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77. Euler's Totient Function :

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78. Burnside Lemma :

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79. Edit/Levenshtein Distance :

[Tutorial](#), [Introduction](#), [Tutorial](#), [Problem](#), [Problem](#)

80. [Branch and Bound](#)

81. [Math for Competitive Programming](#)

82. Mo's Algorithm : [Tutorial and Problems](#)

842 Likes

Data Structures

[Programming practices and learning](#)

ravi0213 #2 August 1, 2014, 12:02am

we already have a topic for list of imp algo

<http://discuss.codechef.com/questions/18752/what-are-the-must-known-algorithms-for-online-programming-contests>

12 Likes

its_pheonix #3 August 1, 2014, 5:18am

A good initiative 😊

34 Likes

utkarsh13 #4 August 3, 2014, 11:44am

add geeksforgeeks.org for tutorials

4 Likes

grvana #5 August 3, 2014, 2:54pm

I bookmarked this page... relating to the problem is best part... thanku...
want more...😊

4 Likes

johri21 #6 August 4, 2014, 2:21am

Nice Initiative I would recommend <http://e-maxx.ru/algo/> for the implementation and theory.
Make use of google translate. It also have a good set of questions in the end.

For DP I would recommend [this](#) the topic is nicely explained by Mimino.(For starters)

8 Likes

vicky002 #7 August 5, 2014, 7:49pm

Take a look of this website once...Explanation of all the algorithms from different sources can be found at one place!!!

<http://algorithm.daqwest.com/>

12 Likes

codemaster1994 #8 August 7, 2014, 10:54am

[link](#)

The above link has lesser known but useful data structures.

31 Likes

[ronakymca](#) #9 August 7, 2014, 12:42pm

I think stackoverflow can also be of immense help.

Really awesome effort.

8 Likes

[rajat_dtc](#) #10 August 7, 2014, 1:48pm

For heavy-light decomposition - http://wcipeg.com/wiki/Heavy-light_decomposition

19 Likes

[rishavz_sagar](#) #11 August 9, 2014, 2:13pm

I have found a nice implementation of Dijkstra's algorithm using c++. Please , have a look at the following link:

<http://zobayer.blogspot.in/2009/12/dijkstras-algorithm-in-c.html>

3 Likes

[ravi0213](#) #12 August 12, 2014, 9:49pm

Matrix exponentiation : <http://zobayer.blogspot.in/2010/11/matrix-exponentiation.html>

related problem : <http://www.hackerearth.com/problem/algorithm/long-walks-from-office-to-home-sweet-home-1/>

17 Likes

[gdisastery1](#) #13 August 15, 2014, 2:35pm

One might try <http://e-maxx.ru/> 😊 It's in Russian though, but Google translator might help.

8 Likes

maheshd13 #14 August 15, 2014, 4:39pm

Quick Select

Deque

Binary Search Trees

2 Likes

tech_boy #15 August 17, 2014, 11:59am

Really good work.

God Bless you and you will win IOI 😊

27 Likes

usaxena95 #16 August 18, 2014, 2:27am

GRUNDY NUMBERS-

Grundy numbers for competitive programming

Consider a simple game which two players can play. There are N coins in a pile. In each turn, a player can choose to remove one or two coi...

4 Likes

gaurav_vk #17 August 18, 2014, 11:10am

Superb initiative !! Keep it up

I hope i will help you

2 Likes

freeman92 #18 August 24, 2014, 8:32pm

persistent segment tree: [Explanation with basic code, tutorial with implementations of spoj and codechef problems by Anudeep Nekkanti](#)

2 Likes

thechamp103 #19 August 31, 2014, 12:42am

Try this for classical problems of dp(interactive tutorial)

http://people.cs.clemson.edu/~bcdean/dp_practice/

2 Likes

amitt001 #20 August 31, 2014, 10:21am

This one is an awesome and very good crash course of STL [here](#)

Add this to list.

4 Likes

indiantarget #21 September 16, 2014, 1:33am

Very useful stuff 😊

More on Fenwick tree...might help



Topcoder

Topcoder is a crowdsourcing marketplace that connects businesses with hard-to-find expertise. The Topcoder Community includes more than one million of the world's top designers, developers, data scientists, and algorithmists. Global enterprises and...

2 Likes

nisargshah95 #22 September 17, 2014, 10:55am

For Tower of Hanoi, I suggest you link it to http://en.wikipedia.org/wiki/Tower_of_Hanoi#Recursive_solution. The link you specified only gives the code for it and does attempt to explain the problem. The Wikipedia link explains it properly.

2 Likes

sanjeevs1995 #23 September 19, 2014, 7:58pm

I will try to help you by solving some of the questions myself.

1 Like

prashantmahesh #24 September 21, 2014, 5:12pm

This is awesome work. Thank you everyone! 😊 and i thought i would suggest this: <http://web.stanford.edu/class/cs97si/> for some of the main topics. It was Stanford's course meant specifically for programming competitions. It helped me a lot. Sorry, if is present in the list already ! 😊

4 Likes

amaanu92 #25 September 23, 2014, 12:42pm

<http://www.comp.nus.edu.sg/~stevenha/visualization/index.html>

This contains nice illustrations.

3 Likes

wannabehacker #26 September 26, 2014, 9:32pm

Thanks brother, this is a treasure 😊

2 Likes

moudud99 #27 October 2, 2014, 11:18pm

Hi I find **this site** useful. You can also try that.

1 Like

kplau #28 October 3, 2014, 7:24am

Thank you so much.

2 Likes

utkarsh13 #29 October 6, 2014, 1:52am

To understand how algorithms work, link below is very useful,
[VisuAlgo - visualising data structures and algorithms through animation](#)

3 Likes

undercut #30 October 6, 2014, 5:19am

calculating nCr

Combination

In mathematics a combination is a way of selecting several things out of a larger group, where (unlike permutations) order does not matter. More formally a k-combination of a set S is a subset of k...

also RMQ is more clearly described here

http://www14.informatik.tu-muenchen.de/konferenzen/Jass08/courses/1/moufatich/El_Moufatich_Paper.pdf

2 Likes

y12uc231 #31 October 8, 2014, 12:13pm

For edit Distance:-

<http://www.csse.monash.edu.au/~lloyd/tildeAlgDS/Dynamic/Edit/> and for introduction:
http://en.wikipedia.org/wiki/Wagner–Fischer_algorithm

2 Likes

linux #32 October 21, 2014, 12:38pm

please post some links of tutorials on voronoi diagrams,online construction of 3D convex hull,deunay triangulation and other computational geometry algorithms which are commonly used.Thanks in advance.

1 Like

utsav_deep #33 October 23, 2014, 1:04am

Can someone add more links to DP optimization techniques?

1 Like

amit24jan #34 October 27, 2014, 9:05pm

Nice tutorial... Quite a lot helpful

1 Like

bipin2 #35 October 28, 2014, 8:06pm

Here are a few more questions which you can add to the binary Indexed tree section:

<http://www.spoj.pl/problems/INVCNT/>

<https://www.spoj.pl/problems/MCHAOS/>

<http://www.codechef.com/APRIL11/problems/SPREAD/>

2 Likes

m101cyborg #36 November 4, 2014, 12:05am

Many thanks for taking the initiative and creating this wonderful list.

1 Like

super_sonic #37 November 4, 2014, 6:36pm

A topic that appears a lot these days in many programming contests is Matrix exponentiation. Can someone suggest a good tutorial on that with the variety of problems. Any help will be highly appreciated.

1 Like

abcdexter24 #38 November 4, 2014, 6:54pm

Thanks for this good information. [Mathematics for programming](#) will be helpful.

I started some of these on 24th September, will complete on 24h November, thank you for great compilation, and all comments 😊

1 Like

abhishek_naik #39 November 15, 2014, 6:59pm

This is for dynamic programming, especially for the beginners:

[Click here](#)

Please excuse me if it has been already added before. There are too many posts to check all of them!

1 Like

tirthtp #40 November 29, 2014, 3:18am

Nyc work brother... but don't know where to get started... 😊 totally confused 😊

tirthtp #41 November 29, 2014, 3:18am

Nyc work brother... but don't know where to get started... 😊 totally confused 😊

kp25 #42 November 29, 2014, 11:44am

Here the link regarding Sqrt-Decomposition: <http://kplabs.blogspot.in/2014/11/sqrt-decomposition.html>

1 Like

rishabhprsd7 #43 November 29, 2014, 9:15pm

Can anyone please add some tutorial links for **Greedy Algorithm based Problems** for novice.

Thanks... 😊

sidmohla #44 December 6, 2014, 8:52am

You may like to add BIT FIELDS (although it is common but still you can save a lot of memory...
Go [here](#) and [here](#)

rishabhprsd7 #45 December 11, 2014, 3:32pm

I would like to add some links for learning STL's

<http://cse.csusb.edu/dick/samples/stl.html>

http://cs.stmarys.ca/~porter/csc/ref/stl/cont_deque.html

<http://www.math.ucla.edu/~wittman/10a.1.10w/ccc/ch23/index.html>

<http://www.tenouk.com/Module30.html>

akkeeell #46 December 14, 2014, 3:32pm

Dear Brother please Guide me abuut Data_structure ACM problem...
give me link about easy ACM prblem...
i m bigner...

abhishekssj5 #47 December 18, 2014, 12:56pm

Really great... 😊 Thank you... 😊

Can these algorithms be linked with problems hashtag on codechef...that would be of much
great help...
just a suggestion...

justnoob7 #48 December 22, 2014, 2:45pm

love u who has done it...

nisargshah95 #49 December 24, 2014, 12:05am

Segment trees - Tutorial - These [IIT-K slides](#) are pretty good too.

coderkk #50 January 11, 2015, 11:23pm

nice collections of ds and algorithms (y) Thanks to you 😊

coderkk #51 January 11, 2015, 11:24pm

nice collections of ds and algorithms tutorials(y) Thanks to you 😊

1 Like

rajeevkgprk #52 January 21, 2015, 9:59am

Pl add MO's algorithm <http://blog.anudeep2011.com/mos-algorithm/>.

1 Like

a1a0933 #53 January 24, 2015, 12:33am

I am selected for INOI 2015 and it was a good news which was followed by a bad news that we have to appear INOI using coding languages and i had no idea about them. I need real help in learning cplus plus

1 Like

codester94 #54 January 24, 2015, 11:27pm

BIT tutorial: <http://www.geeksforgeeks.org/binary-indexed-tree-or-fenwick-tree-2/>

1 Like

[raymogg123](#) #55 February 21, 2015, 3:36pm

For KMP algorithm , u can also see this post

[String Searching – The Knuth-Morris-Pratt Algorithm](#)

We've seen how to do the naive approach towards pattern matching. So what about other algorithms that are much more better at doing this task? This is the Knuth-Morris-Pratt (KMP) algorithm for pat...

1 Like

[rhldonly1](#) #56 February 25, 2015, 11:56pm

you can try the link below for nCr % m problem



[Solve Cheese and Random Toppings](#)

How many ways are there to choose exactly R toppings from N toppings? Solving code challenges on HackerRank is one of the best ways to prepare for programming interviews.

[sharru05](#) #57 March 26, 2015, 8:52pm

Thank you very much for this wonderful post... helped a lot

[annem55](#) #58 March 29, 2015, 6:44pm

Thanks very much for the list.

[brijs](#) #59 March 30, 2015, 6:43pm

Would be even more helpful if links to simple problems implementing compulsorily the above algorithms and ds were listed.

1 Like

sharru05 #60 March 30, 2015, 6:59pm

Its really a great effort...thanks you very much

vgg25 #61 April 1, 2015, 3:25pm

best algorithm link I had so far. Awesome!!

manjunath1996 #62 April 29, 2015, 12:18am

Thank you for this work.it will really help a lot.

bangga #63 May 2, 2015, 12:04pm

Terima kasih dan salam kenal.

codechef [Link](#)

code [Link](#)

bangga #64 May 2, 2015, 12:05pm

Terima kasih dan salam kenal.

codechef [Link](#)

code [Link](#)

binay_misra #65 May 3, 2015, 9:31am

Hi friends,

I too have a suggestions but i just posses tutorials they are [Advanced C++ courses](#) covering [STL](#) and [MyCodeSchool](#) however mycodeschool have many practise [Problems](#) too for doing.

Thanks hope you may find it useful

1 Like

sumitbhanu #66 May 7, 2015, 1:07am

for learning data structures :

[mycodeschool](#)

the_wolverine #67 May 21, 2015, 11:05pm

This initiative has really helped me and my friends out in studies and understanding the most important and basic concepts. 😊

Thanks a lot.

alankar63 #68 May 22, 2015, 1:30am

[@neo1tech9_7](#)

link number 80 not working ...can u please update !!

admin123 #69 May 23, 2015, 8:58pm

Sparse Table Problem

<http://www.codechef.com/problems/FRMQ>

manrajsingh #70 May 25, 2015, 3:02pm

There is this blog having great tutorials on Math related problems. You may add this to the list.

COME ON CODE ON

A blog about programming and more programming.

alankar63 #71 June 1, 2015, 7:36pm

suffix arrays _____ very informative -----

<http://www.cs.umd.edu/class/fall2011/cmsc858s/SuffixArrays.pdf>

[aniruddha_paul](#) #72 June 2, 2015, 8:37am

GOD Has sent U :).This will help me a lot as I belong from non cse background 😊

[rcsldav2017](#) #73 June 3, 2015, 10:47am

how can anyone add link to algo to this list...?

[parvbhullar](#) #74 June 11, 2015, 12:24am

take a look at <https://recalll.co/app/?q=algorithms>

[r_s](#) #75 July 3, 2015, 11:19pm

How the 1st bullet (Binary search) has [This](#) as a related binary search problem?

[bradley](#) #76 July 4, 2015, 3:25pm

Hope somebody can Learn the Algorithms and might beat Gennady Korotkevich (@tourist) 😊

[raghu_317](#) #77 July 16, 2015, 5:19pm

can anyone suggest some good problems of increasing level on fft?

[rishavz_sagar](#) #78 July 25, 2015, 12:12am

Please update the broken hungarian algorithm link of top coder with:
[link text](#)

[vinayak15](#) #79 August 24, 2015, 6:23pm

Really a very good initiative taken and a great help for starters in programming.

[ankit777](#) #80 August 24, 2015, 7:15pm

for longest common sequence its usefull using D.P. <http://www.geeksforgeeks.org/dynamic-programming-set-4-longest-common-subsequence> 😊

[dumborakesh](#) #81 September 16, 2015, 10:32pm

thank you

[rcsldav2017](#) #82 September 21, 2015, 3:24am

I appreciate effort to make a huge a long list of all dominating algorithm.

But Source are not upto mark...(Not too Good)...

I want to suggest people It will be very very good if some people can link some more good blogs to each algorithm...

Please attach more Problem Link of codechef who all are based on particular Algorithm...

Hope to see these changes soon...

Happy coding...

[javinpaul](#) #83 September 30, 2015, 10:04pm

Very informative list, great job and thanks a ton

[priyam_161995](#) #84 October 12, 2015, 4:20pm

second last and third last link is not opening just check it out...
link no 78 show me answer in some other language (not readable).

[stormblessed](#) #85 October 13, 2015, 10:13pm

Hi,

I have made a video editorial for solving counting inversions . Do add the link

Here is the link : <https://www.youtube.com/watch?v=Z3LWA5lqAnk>

Thanks.

javinpaul #86 October 17, 2015, 8:09pm

Here are some **data structure and algorithm questions** from Java interviews, not so difficult but gives you good idea of what you can expect.

lj_tcaz #87 October 23, 2015, 4:16am

One data structure subject I've had trouble with is Doubly Linked Nodes, I don't see that on your listing of topics.

darkhire21 #88 November 4, 2015, 2:12pm

For better understanding difference between greedy and dynamic programming read this answer.

<https://www.quora.com/Are-there-any-good-resources-or-tutorials-for-dynamic-programming-besides-the-TopCoder-tutorial/answer/Michal-Danil%C3%A1k?sr&id=3OBi&share=1>

arjunsanjeev7 #89 December 5, 2015, 5:41am

Centroid decomposition of a tree

abenmariem #90 December 10, 2015, 8:30pm

Very interesting list.

robd4k15 #91 December 14, 2015, 9:58am

(Y)gghhhhhhhh

[rob4k15](#) #92 December 14, 2015, 10:01am

This is interesting

[rob4k15](#) #93 December 14, 2015, 10:03am

">

[computaholics](#) #94 January 20, 2016, 11:26am

Dsa

C,hadoop,opengl,java code

[pwarriors](#) #95 February 3, 2016, 10:17am

A really very good initiative, specially for we beginners. I believe it would really help us a lot in knowing and exploring and learning more. God bless you and thanks for this.

[kk_pheonix](#) #96 February 21, 2016, 7:30pm

I would like to suggest my tutorial on DP 😊
[Everything about Dynamic Programming](#)

[tomontee](#) #97 February 23, 2016, 6:33pm

How about Dekker's Algorithm - Pure software mutual exclusion
[Wikipedia](#)

[knott](#) #98 February 24, 2016, 1:31am

This is a worthwhile list, thanks.

(1) you left-out all the variants of hashing storage and retrieval algorithms.

(2) a story of Gaussian elimination can be found at
www.civilized.com/files/gelim2.pdf

knott #99 February 24, 2016, 1:32am

This is a worthwhile list, thanks.

(1) you left-out all the variants of hashing storage and retrieval algorithms.

(2) a story of Gaussian elimination can be found at

www.civilized.com/files/gelim2.pdf

thevillager #100 February 24, 2016, 10:45am

Array- Kadane Algo(Max subarray problem using DP)

divyanshu007 #101 May 13, 2016, 8:38pm

There are many links which don't work... eg
Binary Search (2nd Tutorial and Implementation),
QuickSort (Implementation)

rsampaths16 #102 May 17, 2016, 3:47pm

Please update link for [56] Hungarian-algorithm



Topcoder

Topcoder is a crowdsourcing marketplace that connects businesses with hard-to-find expertise. The Topcoder Community includes more than one million of the world's top designers, developers, data scientists, and algorithmists. Global enterprises and...

pavi8081 #103 June 17, 2016, 6:25pm

I want to report a broken link.

Branch and Bound link is broken. I found this article through google search and think this is the pdf which it links to :

<http://www.mathcs.emory.edu/~cheung/Courses/323/Syllabus/BranchBound/Docs/branch+bound01.pdf>

Please update the link to what I have provided.

Thanks !

Pavi

abhik143 #104 June 20, 2016, 12:51pm

hiiii,

i just heard about a new technology website [QueryHome.com](#) and i asked some questions there. And i m sure that will provide all answer of question you have.

See this:-[Data structure](#)

c0der #105 June 22, 2016, 12:37am

For Convex hull add [monotone chain convex hull algorithm](#). It works in $O(n * \log n)$ and is simplest of all

dportabella #106 August 10, 2016, 4:40am

Is there a website reviewing which data structures and algorithms are used in specific well-known software/websites (such as mysql, postgresql, jdk, android, google ranking...)

for instance, JDK8 Arrays.sort uses timsort alg. mysql uses quicksort+external sort. open street maps routing uses dijkstras...

ps: I am not asking about common data structures and alg in general. I am asking about the internals of some specific well known products.

pss: otherwise, which are the best IT applied research blogs or talks? such as
<https://code.facebook.com/posts/253562281667886/data-scale-june-2016-recap/>

dikhu123 #107 August 13, 2016, 4:24pm

for Rabin-karp there is a problem on hackerearth

>><https://www.hackerearth.com/problem/algorithm/monk-and-match-making/description/>

default911 #108 August 15, 2016, 3:34pm

Please update topcoder tutorial links.

aman05 #109 August 17, 2016, 11:33am

Tutorial on maximum flow in two sections:

- [Section 1](#)

- [Section 2](#)

A nptel lecture on Maximum bipartite matching: [here](#)

PS.: Could someone please upvote this answer so that I have enough reputation to post my questions in the forum.

ravishankar123 #110 August 25, 2016, 2:50am

all the links of topcoder is broken please update it.

bazinga16 #111 August 31, 2016, 12:33am

Ternary Search: [<https://apps.topcoder.com/forums/?module=Thread&threadID=506787&start=0&mc=27>]

smsubham #112 October 3, 2016, 12:59pm

Appreciate this effort.

rashedcs #113 November 9, 2016, 1:58pm

The following links are helpful for data structure and algorithm.

[1.Data Structure](#)

[2.Algorithm](#)

pawandwivedi #114 November 18, 2016, 1:59pm

Topcoder links are broken. Please update them.

harishm17 #115 November 29, 2016, 11:49am

Great initiative...I hope i can too contribute to giving more problems based on these algorithms.
It was of great help for me.

2 Likes

greenharry419 #116 November 29, 2016, 2:25pm

Data structures and Algorithms are two important concepts when it comes to learning any programming language, functional or object oriented, from the ground up. In order to master a language, you must first master the basic groundwork for that language.

chunky_2808 #117 November 29, 2016, 9:33pm

Indeed a good initiative
Apart from this we can also solve problem on sites like spoj and geeksforgeeks.
Good work!!

teracoder #118 December 21, 2016, 8:54pm

Great. Thank you for helping me learn new algorithms and data structures.

satannitr #119 December 24, 2016, 3:40am

add FFT to the collection

billxyd #120 January 28, 2017, 3:06pm

Thanks .These links are really useful for newbies like me.

ayush_7 #121 February 28, 2017, 7:39am

Thanks a lot , this would really help .

[gmiller](#) #122 April 7, 2017, 2:18pm

This website contains a list of basic [c programs](#) for new programmers. I will strongly recommend new programmers to first solve some basic algorithm problems before jumping into online programming contests.

TECH CRASH COURSE

C programming language tutorials, Graphics in C and Sample C programs, Java Design Patterns, Interview questions, C puzzles, star triangle pattern.

[ardentcoder](#) #123 April 9, 2017, 2:41pm

Ultimately! Thank you.

1 Like

[goof_expert](#) #124 April 19, 2017, 7:52am

This could be very helpful...

[shivamk30013](#) #125 April 20, 2017, 2:51am

Thanks

1 Like

[thinkinfinitt](#) #126 April 20, 2017, 3:40am

thank you.you done a good job.

[godslayer12](#) #127 May 9, 2017, 2:54pm

Awesome and comprehensive 😊

[saahilk](#) #128 May 31, 2017, 2:57pm

Thanks for this!

[ani](#) #129 June 6, 2017, 9:59pm

[Shortest path algorithms](#)

[nvs232](#) #130 July 5, 2017, 4:04pm

May God bless you 😊

[cenation092](#) #131 July 6, 2017, 2:41pm

How to come up with DP solution !!

Add this also

<https://www.quora.com/Are-there-any-good-resources-or-tutorials-for-dynamic-programming-besides-the-TopCoder-tutorial/answer/Michal-Danilák>

[hacker_ratty](#) #132 August 16, 2017, 7:52pm

 alt text

[paintbrush](#) #133 August 16, 2017, 11:49pm

I need karma points to ask my question ;-(

[sdroy13](#) #134 August 20, 2017, 8:09pm

Noble approach,God bless you !

It would be nice to order them in a manner that would hopefully let beginner programmers make most out of it

shubham011 #135 September 11, 2017, 11:16pm

Hello everybody,

This is not a question. This is to make you aware of Big-O Prize, where you can learn and earn at the same time. This will motivate many students and will make their brain to work for IQ level questions. This platform will post questions every Sunday and you can submit your answers by successive Wednesday. The details of the winners and solution of all the questions will be available any time between Thursday and Saturday. You can watch these solution videos any time later also, like while preparing your aptitude part for entrance exams such as GATE, GRE, etc. Here is the [link](#) to Big-O Prize. Give it a try and share with other students so that they can also take advantage of this.

Thanks and Regards,

Big-O Prize team.

1 Like

coding_pill #136 September 18, 2017, 5:09pm

Coding and system design interview practice

viralivora #137 October 3, 2017, 12:59pm

I feel game theory should also be a part of the collection

siddarthprakas #138 October 10, 2017, 4:41pm

Hi admin,

Appreciate the effort you have made. Whole bunch of programs all at one place. This is awesome!!!

Binary program, its explanation and examples are good.

I found this link <http://www.flowerbrackets.com/binary-search-program-java/> short, crisp and perfect explanation.

Just a suggestion!!

kk_pheonix #139 October 21, 2017, 6:07pm

Please add this link as well : [Mathematical Expectation : Expectation Value](#)

venk9 #140 October 22, 2017, 9:02pm

Thanks for the comprehensive list. You can find some more supplemental [Data Structure Interview Preparation](#) material here.

madhur4127 #141 December 24, 2017, 12:43pm

For Euler path and circuits, I think this presentation is very 'meaty', explained in lucid and short manner without extra loads of history of 7 bridges and how euler solved it!

<https://www.math.ku.edu/~jmartin/courses/math105-F11/Lectures/chapter5-part2.pdf>

siddarthprakas #142 March 27, 2018, 1:59pm

Here's the [quicksort algorithm](#) and [merge sort algorithm](#) along with explanation, implementation and example. Hope it helps everyone.

avm #143 June 16, 2018, 3:58am

Here's the most practical segment tree explanation and implementation I've ever read:
[Efficient and easy segment trees](#)

knakul853 #144 October 7, 2018, 12:49am

i just need some upvote to upvote this post

raghuwanshraj #145 December 13, 2018, 2:06am

thankyou so much guys for such help;it is really helpful for me as now i have a concise collection for what should i look upon.
keep up the good work community

[diveshjain25](#) #146 February 20, 2019, 11:32am

Check out the best [DSA tutorials](#). Here you will find the best dsa tutorials recommended by programming community.

[thespacedude](#) #147 August 1, 2014, 3:10pm

Just a suggestion. Sort this list according to their usage. Like, the algorithms which are most used would be ranked first, then the rarely used problems.

30 Likes

[neo1tech9_7](#) #148 March 28, 2019, 12:59am

I do add the ones that I find are good.

1 Like

[neo1tech9_7](#) #149 March 28, 2019, 12:59am

Added. Thanks 😊

[neo1tech9_7](#) #150 March 28, 2019, 12:59am

Thanks a lot 😊

[neo1tech9_7](#) #151 March 28, 2019, 12:59am

Thanks a lot 😊

1 Like

[neo1tech9_7](#) #152 March 28, 2019, 12:59am

I hope so too 😊

[neo1tech9_7](#) #153 March 28, 2019, 12:59am

will add 😊

[tech_boy](#) #154 March 28, 2019, 12:59am

More concise collection of STL...



SGI.com Tech Archive Resources now retired

The previously available SGI.com Tech Archive Resources have been retired as part of the Hewlett Packard Enterprise acquisition of SGI. The Tech Archive information previously posted on www.sgi.com is no longer available: MLC++ OpenGL®...

[neo1tech9_7](#) #155 March 28, 2019, 12:59am

Thanks! 😊

[neo1tech9_7](#) #156 March 28, 2019, 12:59am

Thanks! 😊

[travis_bickle](#) #157 September 9, 2014, 10:41pm

For BIT use this tutorial: <http://stackoverflow.com/questions/15439233/bitusing-a-binary-indexed-tree> - way better than all other resources.

And thanks for the resource.

2 Likes

[ahsankamal](#) #158 March 28, 2019, 12:59am

Thanks friends .These links are really useful for newbies like us. May Allah(swt) bless and guide all those who contributed in collecting these links.

3 Likes

[neo1tech9_7](#) #159 March 28, 2019, 12:59am

already added 😊

[neo1tech9_7](#) #160 March 28, 2019, 12:59am

Thanks added 😊

[amitt001](#) #161 March 28, 2019, 12:59am

Dijkstra Algorithm <https://www.youtube.com/watch?v=zXfDYaahsNA>

Maybe you can add this also this video tutorial. Awesome video.

[neo1tech9_7](#) #162 March 28, 2019, 12:59am

sorry not adding videos in to this list right now 😢 otherwise i would have added MIT videos as well

[neo1tech9_7](#) #163 March 28, 2019, 12:59am

Thanks ! will add them later.

[neo1tech9_7](#) #164 March 28, 2019, 12:59am

all the things have already been added 😢

[neo1tech9_7](#) #165 March 28, 2019, 12:59am

couldn't find any algorithms 😢

[neo1tech9_7](#) #166 March 28, 2019, 12:59am

The one on RMQ was nice 😊

neo1tech9_7 #167 March 28, 2019, 12:59am

yeah i haven't added as much geometry as i would've liked. Will add them in a day or two. It would be awesome if you could provide link to some problems on those.

neo1tech9_7 #168 March 28, 2019, 12:59am

http://wcipeg.com/wiki/Convex_hull_optimization_technique

linux #169 March 28, 2019, 12:59am

@neo1tech9_7



SPOJ.com - Problem CLOSEST

...

linux #170 March 28, 2019, 12:59am



SPOJ.com - Problem BSHEEP

...

neo1tech9_7 #171 March 28, 2019, 12:59am

will add them later 😊

nishant2002 #172 November 3, 2014, 7:00pm

after spending hours reading KMP from several sites and failing to understand, i found this one very straight forward and well explaining: <http://keithschwarz.com/interesting/code/?dir=knuth-horspoolnsearch>

[morris-pratt](#)

1 Like

[neo1tech9_7](#) #173 March 28, 2019, 12:59am

see the link on 43

[neo1tech9_7](#) #174 March 28, 2019, 12:59am

all of the list 😮 ?? nice 😊

[super_sonic](#) #175 March 28, 2019, 12:59am

Can you please add related problems.

[neo1tech9_7](#) #176 March 28, 2019, 12:59am

i will add them to the list in some time but till then see this



Long walks from Office to Home Sweet Home | Matrix Exponentiation & Math...

Being in a long distance relationship, giving time to your girlfriend, focusing on your job and maintaining fitness, doing all three of these is not an easy task. So, to ...

[neo1tech9_7](#) #177 November 10, 2014, 12:52am

@nishant2002 added 😊

[neo1tech9_7](#) #178 March 28, 2019, 12:59am

will add it later 😊

rishabhprsd7 #179 March 28, 2019, 1:00am

Solve questions from past ACM ICPC replay contest.

<http://www.codechef.com/contests>

damn_me #180 March 28, 2019, 1:00am

See this: <http://codeforces.com/blog/entry/5651> and <https://onedrive.live.com/?cid=a7b8002ee242b572&id=A7B8002EE242B572!3746>

2 Likes

neo1tech9_7 #181 March 28, 2019, 1:00am

Thanks a lot 😊

nisargshah95 #182 March 31, 2015, 9:33pm

@neo1tech9_7 it seems the first link for Binary Search isn't valid (<http://help.topcoder.com/data-science/competing-in-algorithm-challenges/algorithm-tutorials/binary-search/>). Look into it.

1 Like

shivam9753 #183 March 28, 2019, 1:00am

wht tht mean?

ankursmooth #184 June 28, 2015, 11:00pm

@neo1tech9_7 all topcoder links need to be updated from <http://help.topcoder.com/data-science/competing-in-algorithm-challenges/algorithm-tutorials/introduction-to-string-searching-algorithms/> to <http://www.topcoder.com/community/data-science/data-science-tutorials/introduction-to-string-searching-algorithms/>

2 Likes

arpit728 #185 March 28, 2019, 1:01am

@its_pheonix

In what order should I start.

arpit728 #186 January 20, 2016, 9:53pm

neo1tech9_7

In what order should I start.

ashwanigautam #187 November 9, 2016, 2:02pm

surprised that there was no mention of FFT and NTT

codedecode0111 #188 April 7, 2017, 2:24pm

Some other algorithms that are not covered in the above list, @codechefofficial youtube link.
<https://www.youtube.com/user/codechefofficial>

vijju123 #189 March 28, 2019, 1:02am

There is a separate thread for this purpose.

kunnu120 #190 March 28, 2019, 1:02am

@paintbrush you can ask your questions here

shubham011 #191 March 28, 2019, 1:03am

Hello everybody,

This is to make you aware of Big-O Prize, where you can learn and earn at the same time. This will motivate many students and will make their brain to work for IQ level questions. This

platform will post questions every Sunday and you can submit your answers by successive Wednesday. The details of the winners and solution of all the questions will be available any time between Thursday and Saturday. Here is the link (<https://www.youtube.com/channel/UCQUvWGQu2LbVMtS1fmML0fQ/videos>) to Big-O Prize. Play, Share and Subscribe.

Thanks and Regards,

Big-O Prize team.

foobar0 #192 August 23, 2018, 1:52pm

Here is one more resource which I think you should add to your list -

<https://www.interviewbit.com/courses/programming/topics/dynamic-programming/>

worldfinal #193 December 13, 2018, 10:28am

please make github repo for this...

1 Like

om_10 #194 May 15, 2019, 4:15pm

Its really helpful!!

karangreat234 #195 May 15, 2019, 4:57pm

Wow.Wow.I just found Gold+diamond mine!!

hindu_bale #196 June 4, 2019, 5:41am

There's no need of Google Translator...lol... Try this out : [E-Maxx in English](#)

1 Like

mithil467 #197 June 17, 2019, 8:36pm

Malacher and tries not working

rude009 #199 September 19, 2019, 2:18pm

Don't mind my post. Just keeping this thread alive for new members. This is a gold mine!

1 Like

amarshukla123 #200 October 16, 2019, 6:30pm

are these to be strictly learnt and practiced in the same ordered way or is it preferable to learn them in this order?
