**CodeZoned**

**Computer Science Resources**

**Introduction to Computer Science**

**Introduction Course**: <https://www.edx.org/course/cs50s-introduction-computer-science-harvardx-cs50x>

**Important Links:**

1. **Stanford Library:** <http://cslibrary.stanford.edu/>
2. **Programming Camp Syllabus:**

<https://docs.google.com/document/d/1_dc3Ifg7Gg1LxhiqMMmE9UbTsXpdRiYh4pKILYG2eA4/edit>

1. **Books:** <https://drive.google.com/folderview?id=1TYisa-3_A8AeAdfBFAgrEMrb69ynibpu> , <https://www.google.co.in/amp/s/www.webpagefx.com/blog/web-design/free-books-code/amp/> , [https://www.onlineprogrammingbooks.com](https://www.onlineprogrammingbooks.com/)
2. **Academic Torrents:**  
   [http://academictorrents.com](http://academictorrents.com/)  
   <http://academictorrents.com/collection/video-lectures>
3. **Online Programming Courses and Tutorials:**  
   [http://hackr.io](http://hackr.io/)
4. **OSSU for CSE:**

<https://github.com/ossu/computer-science/blob/dev/README.md>

1. **Programming books for free:**[https://goalkicker.com](https://goalkicker.com/)

**Python**

**Introductory courses and tutorials:**

**MIT OCW:**

<https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-0001-introduction-to-computer-science-and-programming-in-python-fall-2016/lecture-videos/>

**EdX:**

<https://www.edx.org/course/introduction-python-absolute-beginner-microsoft-dev236x-0>

**Tutorials:**

<https://docs.python.org/3/tutorial/>

**Full stack python:** <https://drive.google.com/file/d/0B6KlugcejrSMVTZCNVEzUWJKMjg/view?usp=drivesdk>

**Data Structures & Algorithms**

**Introductory courses and tutorials:**

**MIT OCW**

<https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-006-introduction-to-algorithms-fall-2011/lecture-videos/>

**IISc:**

<http://lcm.csa.iisc.ernet.in/dsa/dsa.html>

**Miscellaneous:**

<http://e-maxx.ru/>

<https://discuss.codechef.com/questions/64426/awesome-resource-for-ds-and-algorithms>

<https://www.technotification.com/2018/03/top-10-algorithms-for-programmer.html/amp>

<https://www.youtube.com/user/mycodeschool/playlists>

**Sieve of Eratosthenes**  
<https://www.geeksforgeeks.org/sieve-of-eratosthenes/>

**AVL & Red Black Trees:**

<https://www.geeksforgeeks.org/avl-tree-set-1-insertion/>  
<http://btechsmartclass.com/DS/U5_T3.html>  
<http://btechsmartclass.com/DS/U5_T4.html>  
<https://www.geeksforgeeks.org/red-black-tree-set-1-introduction-2/>

**Merge Sort Tree:**  
<https://discuss.codechef.com/questions/94448/merge-sort-tree-tutorial>

**Heaps:**

<https://www.hackerearth.com/practice/data-structures/trees/heapspriority-queues/tutorial/>

**MO’s Algorithm:**  
<http://codeforces.com/blog/entry/7383>  
<https://blog.anudeep2011.com/mos-algorithm/>

**Knapsack Problem**:  
<https://en.m.wikipedia.org/wiki/Knapsack_problem>

**Big O cheat sheet:**

<http://bigocheatsheet.com/pdf/big-o-cheatsheet.pdf>

**Practice Algorithms**:  
<http://hackerearth.com/practice/algorithms>

**Problem Solving with DSA and Python:**

<http://interactivepython.org/courselib/static/pythonds/index.html>

**Visualizing Algorithms:**  
<https://visualgo.net/en>

<http://sorting.at/>

**Competitive Programming**

**Introduction to CP:**

<https://www.hackerearth.com/practice/notes/getting-started-with-the-sport-of-programming/>  
<https://discuss.codechef.com/questions/37684/learn-competitive-programming>  
<https://discuss.codechef.com/questions/18752/what-are-the-must-known-algorithms-for-online-programming-contests>

**Related Materials:**

<https://github.com/lnishan/awesome-competitive-programming/blob/master/README.md>

**Square Root Decomposition**:  
<https://m.youtube.com/watch?v=VGq6w9TlJBY>

**Floating Point Arithmetic:**  
<https://docs.oracle.com/cd/E19957-01/806-3568/ncg_goldberg.html>

**Tools to improve programming skills:**  
<https://www.technotification.com/2018/04/tools-improve-programming-skills.html/amp>

**Standard Template Library:**  
<https://www.topcoder.com/community/data-science/data-science-tutorials/power-up-c-with-the-standard-template-library-part-1>

**Python v/s C:**<https://www.quora.com/Should-I-begin-with-C%2B%2B-or-python-in-competitive-programming/answer/Mariya-Mykhailova?share=454ed0dd&srid=hTaTH>  
<https://softwareengineering.stackexchange.com/questions/125576/why-is-c-predominant-in-programming-contests-and-competitions>

**Discrete Mathematics**

**Introductory Courses:**

**MIT OCW:**

<https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-042j-mathematics-for-computer-science-fall-2010/>

**Generating Functions:**

<http://cse.iitkgp.ac.in/~animeshm/generating_funct.pdf>

**Sequences and Series:**  
<https://en.wikipedia.org/wiki/Category:Sequences_and_series>  
<https://oeis.org/>

**Famous Theorems & Conjectures:**

**Four Color Theorem:**  
<https://en.m.wikipedia.org/wiki/Four_color_theorem>

**Goldbach’s Conjecture:**  
<https://en.m.wikipedia.org/wiki/Goldbach%27s_conjecture>

**Godel’s Incompleteness Theorems**:  
[https://en.m.wikipedia.org/wiki/Gödel%27s\_incompleteness\_theorems](https://en.m.wikipedia.org/wiki/G%C3%B6del%27s_incompleteness_theorems)

**Menger’s Theorem:**<https://en.m.wikipedia.org/wiki/Menger%27s_theorem>

**Developmental Coding**

**XHTML and CSS Tutorials:**  
<https://youtu.be/cqszz_OfAFQ>

**Android Tutorials Playlist:**  
<http://www.youtube.com/playlist?list=PLlxmoA0rQ-LyCGSSD_nuPAmXDSR_FU0RR>

Algorithm and Data Structures Course:

**Necessary Stuff:**  
<https://drive.google.com/drive/folders/0ByWO0aO1eI_MN1BEd3VNRUZENkU>

**Web development with a head start:**<https://www.geeksforgeeks.org/begin-web-development-with-a-head-start/>  
<https://www.freelock.com/newsletter/10-problems-web-development-projects-and-how-weve-solved-them>

**Coding Style and its importance:**

<https://www.smashingmagazine.com/2012/10/why-coding-style-matters/>  
<https://users.ece.cmu.edu/~eno/coding/CCodingStandard.html>  
<https://javascript.info/coding-style>

**Important Git Commands:**  
<https://www.technotification.com/2018/04/important-git-commands.html/amp>

**Git and Github Live Webinar:**

<https://youtu.be/D3RVdblCmk0>

**Machine Learning**

**Pre-requisites:**

<http://www.sharpsightlabs.com/blog/machine-learning-prerequisite-isnt-math/>  
<https://www.quora.com/What-are-prerequisites-to-start-learning-machine-learning>  
<https://elitedatascience.com/learn-machine-learning>

**Linear Algebra:**  
<https://bit.ly/2JjHsXA>

**Calculus:**  
<http://bit.ly/gilbert-strang-calculus>

**Optimization Methods:**<http://bit.ly/EDX-MIT-Optimization-Methods>

**Probability and Statistics:**

Probability distributions:  
<http://mathlets.org/mathlets/probability-distributions/>

<http://bit.ly/MIT-Applied-Probability>  
<http://bit.ly/Statistics-Part-1>  
<http://bit.ly/Statistics-Part-2>

**Learning Path:**

<https://gist.github.com/hardik2396/83d642af3b22811fac6719bf28ceb048>  
<https://gist.github.com/kdexd/4b41e6edbbffb9886b1b2a121d327b1d>

**Weka v/s Scikit:**

<https://www.quora.com/What-is-a-better-machine-learning-library-Weka-or-scikit-learn?share=e99bd97c&srid=uxA0R>

**Top-5 challenges in ML**:  
<https://youtu.be/AzDy55uhY3o>

**Computer Networks**

**Computer Networks Courses:**  
<https://www.cse.iitk.ac.in/users/dheeraj/cs425/>

<https://www.codeproject.com/Articles/1232042/Introduction-to-Convolutional-Neural-Networks>

**How DNS works?**  
[http://howdns.works](http://howdns.works/)

**Ethical Hacking:**  
<https://www.cybrary.it/course/ethical-hacking-scratch/>

**Symbolic Computation**

**Chebyshev Polynomials:**  
<https://en.m.wikipedia.org/wiki/Chebyshev_polynomials>

**Algorithms for Computer Algebra:**<http://download1.libgen.io/ads.php?md5=343FE31EFD7105329DB99CD54C702528>

**Miscellaneous**

**MIT OCW course list:**<https://ocw.mit.edu/courses/>

**Coder’s Diary:**  
<https://play.google.com/store/apps/details?id=asquero.com.myapplication>

**Dart introduction:**  
<https://youtu.be/5KlnlCq2M5Q>

**How to pass a function as a parameter in C:**  
<https://stackoverflow.com/questions/9410/how-do-you-pass-a-function-as-a-parameter-in-c>