IEEE CP SMP 2018
Resources Document

Contents

Week 1 - Intro to CP, STL, and Time Complexity

C++

Learning:

http://www.cplusplus.com/doc/tutorial/
https://www.geeksforgeeks.org/c-tricks-competitive-programming-c-11/

Assignment:

None

STL

Learning:

https://github.com/haseebr/competitive-programming/tree/master/Materials/stl
https://www.geeksforgeeks.org/cpp-stl-tutorial/
http://www.cplusplus.com/reference/stl/
https://www.tutorialspoint.com/cplusplus/cpp_stl_tutorial.htm

Assignment: *(Due on May 9, Wednesday)*

https://docs.google.com/document/d/1AoFQw_BnOtvGLh7CRGoSiiNQyAzfOLXgFLwYdxxK7Zc/edit?usp=sharing

Problems:

http://codeforces.com/problemset/problem/975/A

Time Complexity

Learning:

Must Read : http://discrete.gr/complexity/

http://qr.ae/TUTyV5

https://medium.com/programming-and-algorithms-iitr/competitive-programming-a-warm-up-66d0ce0bbaff

https://codeburst.io/the-ultimate-beginners-guide-to-analysis-of-algorithm-b8d32aa909c5

https://jshilpa.com/the-ultimate-guide-to-big-o-notation-learning-through-examples/

http://bigocheatsheet.com

https://codility.com/media/train/1-TimeComplexity.pdf

STL Time Complexity Reference :

http://www.cs.northwestern.edu/~riesbeck/programming/c++/stl-summary.html

Assignment: *(Due on May 10, Thursday)*

https://docs.google.com/document/d/1Xzlu-IrR3mENtGhNZafnV-YtzUzqt3LfAXNA0Sp0Wfk/edit?usp=sharing

Week 2 - Greedy and Bitmasks

General Assignment for week 2 onwards:
https://docs.google.com/document/d/1AkUf0t-b1U6nPwAj3mNh7kxR-dmhUczI9bb3Pd8w8k0/edit?usp=sharing

Greedy

Learning:
-https://www.hackerearth.com/practice/algorithms/greedy/basics-of-greedy-algorithms/tutorial/
https://www.topcoder.com/community/data-science/data-science-tutorials/greedy-is-good/

Problems: *(Due on 21 May, Monday)*
http://codeforces.com/problemset/problem/804/A
http://codeforces.com/problemset/problem/909/A
http://codeforces.com/problemset/problem/980/C
http://codeforces.com/problemset/problem/883/M
http://codeforces.com/problemset/problem/982/B

Bit Manipulation

Learning:
https://ieeenitk.org/blog/bit-manipulation/
http://codeforces.com/blog/entry/18169

Problems: *(Due on 25 May, Friday)*
http://codeforces.com/problemset/problem/912/B
http://codeforces.com/problemset/problem/484/A
http://codeforces.com/problemset/problem/550/B
http://codeforces.com/problemset/problem/535/B
http://codeforces.com/problemset/problem/878/A
https://www.codechef.com/MARCH18A/problems/XXOR

Week 3 - Math, Brute Force and Recursion

Math

Learning:

https://www.hackerearth.com/practice/math/number-theory/basic-number-theory-1/tutorial/
https://www.topcoder.com/community/data-science/data-science-tutorials/prime-numbers-factorization-and-euler-function/
https://www.geeksforgeeks.org/count-divisors-n-on13/
http://www.geeksforgeeks.org/matrix-exponentiation/
https://www.geeksforgeeks.org/sieve-of-eratosthenes/

Problems: *(Due on 02 June, Saturday)*

http://codeforces.com/problemset/problem/804/B
http://codeforces.com/problemset/problem/983/A
https://www.hackerrank.com/contests/web-club-winter-2017-opc/challenges/permutation-and-combination
https://www.hackerrank.com/contests/web-club-winter-2017-opc/challenges/power-of-large-numbers
https://www.hackerrank.com/contests/nitkylc/challenges/yogi-and-jinx
https://www.hackerrank.com/contests/cicada-3301-2/challenges/group-captain-meghanas-dream

Brute Force and Recursion

Problems: *(Due on 07 June, Thursday)*

https://www.hackerrank.com/contests/projecteuler/challenges/euler091
http://codeforces.com/problemset/problem/55/B
http://codeforces.com/problemset/problem/402/B

Week 4 - Dynamic Programming

Learning:
https://www.topcoder.com/community/data-science/data-science-tutorials/dynamic-programming-from-novice-to-advanced/
https://www.hackerearth.com/practice/algorithms/dynamic-programming/introduction-to-dynamic-programming-1/tutorial/
https://ieee.nitk.ac.in/blog/bit-manipulation/ (last section)

Problems: *(Due on 19 June, Tuesday)*

https://www.hackerearth.com/problem/algorithm/vaishu-and-tower-arrangements/
https://www.hackerrank.com/contests/projecteuler/challenges/euler067
http://codeforces.com/problemset/problem/518/D
http://codeforces.com/problemset/problem/580/D
http://codeforces.com/problemset/problem/479/E
http://codeforces.com/problemset/problem/753/A
http://codeforces.com/problemset/problem/909/C

Week 5 & 6 - Graphs and Trees

Learning:
https://www.hackerearth.com/practice/algorithms/graphs/graph-representation/tutorial/
https://www.hackerearth.com/practice/algorithms/graphs/breadth-first-search/tutorial/
https://www.hackerearth.com/practice/algorithms/graphs/depth-first-search/tutorial/
https://www.hackerearth.com/practice/algorithms/graphs/minimum-spanning-tree/tutorial/
https://www.hackerearth.com/practice/algorithms/graphs/shortest-path-algorithms/tutorial

Problems: *(Due on 07 July, Saturday)*

1. https://www.hackerearth.com/practice/algorithms/graphs/graph-representation/practice-problems/algorithm/monk-at-the-graph-factory/
2. https://www.hackerearth.com/practice/algorithms/graphs/breadth-first-search/practice-problems/algorithm/monk-and-the-islands/
3. https://www.hackerearth.com/practice/algorithms/graphs/breadth-first-search/practice-problems/algorithm/oliver-and-the-battle-1/
4. https://www.hackerearth.com/practice/algorithms/graphs/depth-first-search/practice-problems/algorithm/bishu-and-his-girlfriend/
5. https://www.hackerearth.com/practice/algorithms/graphs/depth-first-search/practice-problems/algorithm/happy-vertices/
6. https://www.hackerearth.com/practice/algorithms/graphs/minimum-spanning-tree/practice-problems/algorithm/friendless-dr-sheldon-cooper-14/
7. https://www.hackerearth.com/practice/algorithms/graphs/minimum-spanning-tree/practice-problems/algorithm/mr-president/
8. https://www.hackerearth.com/practice/algorithms/graphs/shortest-path-algorithms/practice-problems/algorithm/xenny-and-travel-icpc-8/
9. https://www.hackerearth.com/practice/algorithms/graphs/shortest-path-algorithms/practice-problems/algorithm/irctc/
10. http://codeforces.com/problemset/problem/982/C

Week 7 - Segment Trees

Learning:
https://www.hackerearth.com/practice/data-structures/advanced-data-structures/segment-trees/tutorial/
https://www.hackerearth.com/practice/notes/segment-tree-and-lazy-propagation/

Problems: *(Due on July 15, Sunday)*
http://codeforces.com/problemset/problem/145/E
http://codeforces.com/contest/19/problem/D
http://codeforces.com/problemset/problem/52/C
http://codeforces.com/problemset/problem/895/E
http://codeforces.com/contest/558/problem/E