# CODESHOWS

## Winter Module (2nd year)

### Winter Vacation Tips

I. Complete All the previous modules Provided by Codeshows.
II. Do regular Competitive Coding.
III. Take part in every contest on various competitive sites. (Codechef , Codeforces , Leetcode )
IV. Try to develop some mini project in C++ or Java. You can enhance your skills in Web dev, Android, Machine learning etc.
V. Learn basic GitHub and Open Source.
VI. ***Everyone must fill this Form: -*** https://forms.gle/gAFYSGM4967GyFTL8

### Bonus Links

I. https://drive.google.com/drive/u/0/folders/0ByWO0aO1eI_MN1BEd3VNRUZENkU ( ***500 GB Free courses***)
II. https://a2oj.com/ ( For finding category wise best questions)
III. https://oeis.org/ ( For solving any series question)
IV. https://discuss.codechef.com/t/data-structures-and-algorithms/6599 (Enhance your DSA skills)
V. https://play.google.com/store/apps/details?id=g119.da2016.CodingSchedule&hl=en_US ( Useful app for coding Schedule)
VI. https://www.geeksforgeeks.org/computer-science-projects/ (Basic project ideas)

# GRAPH

## Graph Representations: -

Resources-

1. https://www.hackerearth.com/practice/algorithms/graphs/graph-representation/tutorial/
2. https://www.geeksforgeeks.org/graph-and-its-representations/

## Graph Traversals (BFS and DFS): -

Resources-

1. https://youtu.be/pcKY4hjDrxk
2. https://www.hackerearth.com/practice/algorithms/graphs/breadth-first-search/tutorial/
3. https://www.hackerearth.com/practice/algorithms/graphs/depth-first-search/tutorial/
4. https://www.geeksforgeeks.org/breadth-first-search-or-bfs-for-a-graph/
5. https://www.geeksforgeeks.org/depth-first-search-or-dfs-for-a-graph/

Problems-

1. https://www.geeksforgeeks.org/find-count-of-pair-of-nodes-at-even-distance/
2. https://www.geeksforgeeks.org/implementation-of-dfs-using-adjacency-matrix/
3. https://www.geeksforgeeks.org/left-right-traversal-of-all-the-levels-of-n-ary-tree/
4. https://www.geeksforgeeks.org/find-parent-of-each-node-in-a-tree-for-multiple-queries/
5. https://www.geeksforgeeks.org/print-all-neigbour-nodes-within-distance-k/
6. https://www.geeksforgeeks.org/find-the-first-n-pure-numbers/
7. https://www.hackerearth.com/practice/algorithms/graphs/breadth-first-search/practice-problems/
8. https://www.hackerearth.com/practice/algorithms/graphs/depth-first-search/practice-problems/

## Graph Connectivity: -

Resources-

1. https://www.hackerearth.com/practice/algorithms/graphs/articulation-points-and-bridges/tutorial/
2. https://www.hackerearth.com/practice/algorithms/graphs/biconnected-components/tutorial/
3. https://www.hackerearth.com/practice/algorithms/graphs/strongly-connected-components/tutorial/

Problems-

1. https://www.geeksforgeeks.org/biconnectivity-in-a-graph/
2. https://www.geeksforgeeks.org/articulation-points-or-cut-vertices-in-a-graph/
3. https://www.geeksforgeeks.org/find-if-there-is-a-path-between-two-vertices-in-a-given-graph/
4. https://www.geeksforgeeks.org/connectivity-in-a-directed-graph/
5. https://www.geeksforgeeks.org/biconnected-components/
6. https://www.geeksforgeeks.org/strongly-connected-components/
7. https://www.geeksforgeeks.org/find-number-of-islands/
8. https://www.geeksforgeeks.org/bridge-in-a-graph/

## Shortest Path Algorithm: -

Resources-

1. https://www.geeksforgeeks.org/dijkstras-shortest-path-algorithm-greedy-algo-7/
2. https://www.hackerearth.com/practice/algorithms/graphs/shortest-path-algorithms/tutorial/
3. https://www.youtube.com/watch?v=XB4MIexjvY0

Problems-

1. https://www.geeksforgeeks.org/find-minimum-weight-cycle-undirected-graph/
2. https://www.geeksforgeeks.org/minimum-cost-path-left-right-bottom-moves-allowed/
3. https://www.hackerearth.com/practice/algorithms/graphs/shortest-path-algorithms/practice-problems/algorithm/booze-first-76e979dd/
4. https://www.hackerearth.com/practice/algorithms/graphs/shortest-path-algorithms/practice-problems/algorithm/the-parking-slot-9fac40d6/
5. https://www.hackerearth.com/practice/algorithms/graphs/shortest-path-algorithms/practice-problems/algorithm/graph-question/
6. https://www.hackerearth.com/practice/algorithms/graphs/shortest-path-algorithms/practice-problems/algorithm/mancunian-goes-to-the-derby/
7. https://www.hackerearth.com/practice/algorithms/graphs/shortest-path-algorithms/practice-problems/algorithm/mittal-wants-to-go-to-play/

## BEST Graph Tutorials: -

1. https://www.geeksforgeeks.org/graph-data-structure-and-algorithms/
2. https://www.hackerearth.com/practice/algorithms/graphs/
3. https://www.youtube.com/channel/UCZCFT11CWBi3MHNlGf019nw

## BEST Graph Questions: -

1. https://www.spoj.com/problems/LABYR1/
2. https://www.spoj.com/problems/PT07Y/
3. https://www.spoj.com/problems/PT07Z/
4. https://www.spoj.com/problems/PYRA/
5. https://www.spoj.com/problems/BUGLIFE/
6. https://www.spoj.com/problems/BITMAP/
7. https://www.spoj.com/problems/ONEZERO/
8. https://www.spoj.com/problems/POUR1/
9. https://www.spoj.com/problems/POSTERS/
10. https://www.spoj.com/problems/KOICOST/
11. https://www.codechef.com/LTIME61B/problems/TREESORT
12. https://codeforces.com/problemset/problem/780/C
13. https://codeforces.com/problemset/problem/842/C
14. https://codeforces.com/problemset/problem/1037/D
15. https://codeforces.com/problemset/problem/959/B