**Assignment-0:**

a. Any 20 problems from <https://www.hackerrank.com/contests/smart-interviews-basic/challenges>

b. At least 25 problems from <https://www.hackerrank.com/domains/algorithms>

c. Any 15 problems from <http://codeforces.com/problemset?order=BY_SOLVED_DESC>

d. Any 15 problems from <https://www.codechef.com/problems/school?sort_by=SuccessfulSubmission&sorting_order=desc>

e. Any 5 problems from <https://www.spoj.com/problems/classical/sort=6>

f. Any 3 problems from <https://www.hackerrank.com/domains/data-structures>

**Assignment-1:**

1. At least 15 problems from the 1st 25 problems in <https://www.hackerrank.com/contests/smart-interviews/>

2. All problems from https://www.interviewbit.com/courses/programming/topics/time-complexity/#problems from "Basic primer", "Math" and "Compare functions".

3. At least 3 problems from [https://www.interviewbit.com/courses/programming/topics/bit-manipulation/#problems](https://www.interviewbit.com/courses/programming/topics/bit-manipulation/" \l "problems)

4. At least 5 problems from <https://www.hackerrank.com/domains/algorithms/bit-manipulation>

5. At least 2 problems from [https://www.interviewbit.com/courses/programming/topics/math/#problems](https://www.interviewbit.com/courses/programming/topics/math/" \l "problems)

6. Go through basic sorting algorithms: Bubble Sort, Selection Sort, Insertion Sort

7. MUST participate in Codeforces Round #686 (Div. 3) on Tuesday, 8PM. You can register right away: <https://codeforces.com/contests>

**Assignment-2:**

(A) <https://www.hackerrank.com/contests/smart-interviews/challenges>

1. TOH [Recursion]

2. Triple Triple [Bit-Manipulation]

3. Repeated Numbers [Bit-Manipulation]

4. Compute a power b [2 solutions]

5. Subset Sum Problem [Page-12: 2 solutions]

6. Bubble Sort Adhoc/Selection Sort Adhoc/Insertion Sort Adhoc

7. Compute Factorial [Page-10: T+N instead of TxN]

8. Interleavings

(B) InterviewBit

1. Different Bits Sum Pairwise

2. Repeat and Missing Number Array

(C) <https://www.hackerrank.com/challenges/magic-square-forming/problem>[2 solutions]

(D) At least 5 more problems from each of the following:

1. CodeChef

2. CodeForces

3. Smart Interviews Basic

(E) At least 2 problems from each of the following:

1. [https://www.interviewbit.com/courses/programming/topics/arrays/#problems](https://www.interviewbit.com/courses/programming/topics/arrays/" \l "problems)

2. [https://www.interviewbit.com/courses/programming/topics/math/#problems](https://www.interviewbit.com/courses/programming/topics/math/" \l "problems)

(F) Few problems on Backtracking from the following:

1. [https://www.interviewbit.com/courses/programming/topics/backtracking/#problems](https://www.interviewbit.com/courses/programming/topics/backtracking/" \l "problems)

2. <https://www.hackerrank.com/interview/interview-preparation-kit/recursion-backtracking/challenges>

**Assignment-3:**

1. Any 5 problems from <https://www.hackerrank.com/contests/smart-interviews/challenges/filters/page:4>

2. BF Backtracking solution for <https://www.hackerrank.com/contests/smart-interviews/challenges/si-cabinets-partitioning>

3. Following problems from <https://www.hackerrank.com/domains/algorithms/implementation>:

a) Migratory Birds

b) Sock Merchant

c) Picking Numbers

d) Non-Divisible Subset

4. Any 5 problems from [https://www.interviewbit.com/courses/programming/topics/two-pointers/#problems](https://www.interviewbit.com/courses/programming/topics/two-pointers/" \l "problems)

5. Any 3 problems from [https://www.interviewbit.com/courses/programming/topics/binary-search/#problems](https://www.interviewbit.com/courses/programming/topics/binary-search/" \l "problems)

6. The following solutions of <https://www.hackerrank.com/contests/smart-interviews/challenges/si-finding-frequency>

a. Sort + 1BS + Expand

b. Sort + 2BS

c. Sort + Compress to A,B + BS

d. Sort array + Sort queries + 2-pointer + BS in original queries

e. Inbuilt HashMap Library

7. At least 3 problems from <https://www.codechef.com/DEC20B>

8. <https://www.codechef.com/problems/RGAME>

9. <https://www.hackerrank.com/challenges/crossword-puzzle/problem>

10. 1 attempt on <https://www.hackerearth.com/codearena/>

**Assignment-4:**

1. <https://www.hackerrank.com/contests/smart-interviews/challenges/si-sum-of-pairs>

a. MS + BSR

b. Unsorted HashMap

c. Unsorted HashSet

2. <https://www.hackerrank.com/contests/smart-interviews/challenges/si-repeated-numbers>

a. Sorted HashMap

b. Unsorted HashSet

3. Explore other inbuilt libraries/functions as per your language of choice

4. Any 10 puzzles from [https://www.interviewbit.com/puzzles/#problems](https://www.interviewbit.com/puzzles/" \l "problems)

5. Any 2 problems from [https://www.interviewbit.com/courses/programming/topics/hashing/#problems](https://www.interviewbit.com/courses/programming/topics/hashing/" \l "problems)

6. Codeforces Round #690 (Div. 3) on Tuesday at 8PM IST. Register now!

7. All pending assignment problems

8. Quick Sort Algorithm

Additional Interesting Problems on BS

1. <https://www.hackerrank.com/contests/smart-interviews/challenges/si-cabinets-partitioning>

2. <https://www.spoj.com/problems/AGGRCOW/>

3. <https://www.interviewbit.com/problems/matrix-median/>

4. <http://codeforces.com/contest/913/problem/D>

More problems on Hashing

1. <https://www.codechef.com/tags/problems/hashing>

2. <https://codeforces.com/problemset?tags=hashing>

3. <https://a2oj.com/category?ID=93>

[These filters can be used for any topic]

**Assignment-5:**

1. At least 5 new problems from <https://www.hackerrank.com/contests/smart-interviews/>[Page-5,6]

2. At least 5 additional problems from [https://www.interviewbit.com/courses/programming/topics/strings/#problems](https://www.interviewbit.com/courses/programming/topics/strings/" \l "problems)

3. At least 20 problems on strings from <https://www.hackerrank.com/domains/algorithms/strings>

**All assignments combined(6):**

1. At least 50 problems from the first 60 problems in <https://www.hackerrank.com/contests/smart-interviews/>

2. At least 5 problems from each of the following sections on <https://www.interviewbit.com/courses/programming/>

Time Complexity/Arrays/Math/Binary Search/Bit Manipulation/Two Pointers/Strings/Hashing/Backtracking

3. <http://hackerrank.com/domains/algorithms/game-theory>

4. At least 5 problems from each of the sections discussed from <https://www.hackerrank.com/domains/algorithms>

5. At least 20 problems from spoj, including the following:

TDKPRIME/TDPRIMES/PRIME1/ADACUT/ADAFRIEN/THREENUMBERS/TBATTLE/AGGRCOW/SUBXOR/WATER

6. <https://www.youtube.com/watch?v=u_p1SHtNtck&t=4s>

More problems using filters and tags

1. <https://www.codechef.com/tags>

2. <https://codeforces.com/problemset?tags>=<topic>

3. <https://www.a2oj.com/Categories.html>

4. [https://problemclassifier.appspot.com](https://problemclassifier.appspot.com/)

5. <https://community.topcoder.com/tc?module=ProblemArchive>

**Assignment-7:**

1. Revise entire notes thoroughly

2. Continue working on previous combined assignments

3. Solve few problems from Stacks/Queues from:

a. <https://www.hackerrank.com/contests/smart-interviews/challenges/filters/page:7>

b. [https://www.interviewbit.com/courses/programming/topics/stacks-and-queues/#problems](https://www.interviewbit.com/courses/programming/topics/stacks-and-queues/" \l "problems)

4. Go through basics of LinkedLists

**Assignment-8:**

1. Try solving all problems from <https://www.hackerrank.com/contests/smart-interviews-18b/challenges>

2. Solve all problems on Stacks/Queues from:

a. <https://www.hackerrank.com/contests/smart-interviews/challenges/filters/page:7>

b. [https://www.interviewbit.com/courses/programming/topics/stacks-and-queues/#problems](https://www.interviewbit.com/courses/programming/topics/stacks-and-queues/" \l "problems)

3. Any 8 problems from <http://hackerrank.com/domains/data-structures/linked-lists>

4. Any 5 problems from [https://www.interviewbit.com/courses/programming/topics/linked-lists/#problems](https://www.interviewbit.com/courses/programming/topics/linked-lists/" \l "problems)

5. Go through basics of Trees

**Assignment-9:**

1. All problems on Linked Lists froma. <http://hackerrank.com/domains/data-structures/linked-lists>

b. [https://www.interviewbit.com/courses/programming/topics/linked-lists/#problems](https://www.interviewbit.com/courses/programming/topics/linked-lists/" \l "problems)

2. At least 5 problems on Trees from each of the following links:

a. <https://www.hackerrank.com/domains/data-structures/trees>

b. <https://www.hackerrank.com/contests/smart-interviews/challenges/filters/page:8>

c. [https://www.interviewbit.com/courses/programming/topics/tree-data-structure/#problems](https://www.interviewbit.com/courses/programming/topics/tree-data-structure/" \l "problems)

**Assignment-10:**

1. All problems on Trees from:

a. <https://www.hackerrank.com/domains/data-structures/trees>

b. <https://www.hackerrank.com/contests/smart-interviews/challenges/filters/page:8>

c. [https://www.interviewbit.com/courses/programming/topics/tree-data-structure/#problems](https://www.interviewbit.com/courses/programming/topics/tree-data-structure/" \l "problems)

2. Solve <https://www.hackerrank.com/contests/smart-interviews/challenges/si-implement-min-heap> using own implementation

3. Solve <https://www.hackerrank.com/contests/smart-interviews/challenges/si-implement-min-heap>using inbuilt library

**Assignment-11:**

1. All problems from "Implement MinHeap" to "Rhymes" from <https://www.hackerrank.com/contests/smart-interviews/challenges/filters/page:10>

2. All problems from <https://www.hackerrank.com/domains/data-structures/trie>

3. All problems on heaps from <https://www.interviewbit.com/courses/programming/topics/heaps-and-maps/>

4. All problems from <https://www.hackerrank.com/domains/data-structures/heap>

5. <https://www.spoj.com/problems/SUBXOR/>

6. 3-5 total problems on DP from:

a) <https://www.hackerrank.com/contests/smart-interviews/challenges/filters/page:11>

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

c) <https://www.hackerrank.com/domains/algorithms/dynamic-programming>

7. Few more basic problems from CodeChef/Codeforces/Spoj

**Final Assignment:**

1. All problems on Graphs from <https://www.hackerrank.com/contests/smart-interviews/challenges/filters/page:12>

2. At least 10 problems from [https://www.interviewbit.com/courses/programming/topics/graph-data-structure-algorithms/#problems](https://www.interviewbit.com/courses/programming/topics/graph-data-structure-algorithms/" \l "problems)

3. At least 5 problems from <https://www.hackerrank.com/domains/algorithms/graph-theory>

4. Problems listed at the bottom in "Graph Theory" PDF material.

**PDF Materials:**

1. Programming Essentials - <https://drive.google.com/file/d/1EuYeu29E0aIMcagdQ5ndSSv7frdzNTre/view?usp=sharing>

2. Data Types, Operators and Bit Manipulations - <https://drive.google.com/file/d/1PpT8Vqwb9NaTWwv_QVpgMfA_ZItx6CVX/view?usp=sharing>

3. Complexity Analysis of Algorithms - <https://drive.google.com/file/d/1rRKCo1BPZU8TQ0SdPOvyiZ8FBvhgyC4B/view?usp=sharing>

4. Complexity Analysis Problem Set - <https://drive.google.com/file/d/1FjAn3TdmY9ej03X4bNCrWNtfJ9S2OFx0/view?usp=sharing>

5. Complexity Analysis Solution Set - <https://drive.google.com/file/d/1zZXTQFpbRtaBRA_ryhr7VOR0qP8qDYAQ/view?usp=sharing>

6. Recursion - <https://drive.google.com/file/d/19YF-ImSsdbUebJkg_h-lXXzMIg9Rmis9/view?usp=sharing>

7. Sorting - <https://drive.google.com/file/d/15xfXxH3hBcv28Whthqmtty96murPKLss/view?usp=sharing>

8. Searching - <https://drive.google.com/file/d/15QapSt_S8ki2EOfJffpWBnQqsiW47JGm/view?usp=sharing>

9. Hashing - <https://drive.google.com/file/d/11hqPCUhg31vzzV_NBI8xwyaDTsud0W6K/view?usp=sharing>

10. Strings - <https://drive.google.com/file/d/1v9ESPnUmIAUY5LOLM3X7SrG9nfCp4kI5/view?usp=sharing>

11. Mixed-bag - <https://drive.google.com/file/d/1rtVH32Sxgc6D_4miMd9zZJQrHpz6pqgf/view?usp=sharing>

12. Stacks - <https://drive.google.com/file/d/1JlWKMlSIoTuLtg0oP3VWjIFSiOmujmuY/view?usp=sharing>

13. Queues - <https://drive.google.com/file/d/1mqqOjVoPykB6LuxATsJOMVHSD6K6rAmZ/view?usp=sharing>

14. Linked Lists - <https://drive.google.com/file/d/1umIwWpSEzN9xVtU7KqlXZCtjSk6fFqHA/view?usp=sharing>

15. Trees - <https://drive.google.com/file/d/1TQaV30IxpeyGYB3OQPV82mXMXb923tR7/view?usp=sharing>

16. Heaps - <https://drive.google.com/file/d/1cT0-uHGP87SNhO0Z1E30yQhXKuD3eIVJ/view?usp=sharing>

17. Trie - <https://drive.google.com/file/d/1gsxqBj1gwub34iiNWt-6QwMT2EBK9UUX/view?usp=sharing>

18. Greedy Paradigm - <https://drive.google.com/file/d/1QAe7LldDkSDK_23-LIc9iutxGtUSRaZz/view?usp=sharing>

19. Dynamic Programming - <https://drive.google.com/file/d/1nmZtaCgntAI9zG6tgUKY2QDdKDcsbzhT/view?usp=sharing>

20. Graph Theory - <https://drive.google.com/file/d/1y9oRcTIBU2Hafm9XoAUDsUUMK3dwlEnE/view?usp=sharing>