PLACEMENT PREPARATION

SUGGESTED TIMELINE

Jan-Apr (Before Intern)

- Choose a language (C++ / Java).
- Learn the syntax of the language.
- Learn stl/c++ thoroughly(You should be very thorough with vectors, stack, queue, deque, priority queue).
- If you choose java, be prepared with collections, comparator, Math class, Fast I/O.
- Be comfortable with the basic implementation. If you are just starting, start with a language track on hackerrank and then practice those topics from gfg and leetcode.
- Always upsolve the unsolved problems at the end of the contest **on the day of the contest itself.**
- Always try to solve the maximum number of problems that you can in the contests, focus on your speed and accuracy. Contests help in pressure handling so do make it a habit to regularly practice on codeforces and leetcode.
- If your english is a bit weak, or you feel you are not confident enough to speak. Start talking with your friends and family in english.
- Topics to cover:
    1. Arrays
    2. Vectors
    3. String
    4. Stack
    5. Queue (Also cover deque, priority queue)
    6. Binary Search
    7. Dp
    8. Graph

(After Intern)

- Cover remaining algorithms.
- Practice/ give contests rigorously on leetcode or interviewBit.
- Try to do at least 30-40 questions (majorly medium and hard) of each topic from leetcode.
- Read GFG articles regularly (data structures/ algorithms) and also try to implement some of these side by side on leetcode.
- Study SQL, practice on hackerrank.
- Read CS subjects
    - OOPS

    - OS (Gate Smasher, Yellow pages)
    - DBMS (sql query, gate smasher)
    - Computer Networks (do this only when you are thorough with above topics, can skip this also)
- Do **Inter IIT Placement** docs of this year and previous year. (**VVImp as questions are repeated**) (Also join the Inter IIT Placement Group in Telegram)
- Prepare for MCQs. (GFG/ placement docs)

July-sep

- **InterviewBit**
- Coding practice/ gfg/ cs subjects
- Try and give contests regularly (at least one in two days whatever level you're at) If there aren't any hosted on the famous websites or if they are tough, search for a new one or host one yourself (sources given below in "Suggested Resources" or give virtual contests).

Mid Oct/ nov

- Interview prep
    - Prepare resume.
        - Projects
        - Technical skills- Only mention those in your resume in which you are confident.
    - Cover important DS algo interview questions from GFG. You can follow this. Regularly use Leetcode to practice too, as you are generally asked to code in your interviews. Do practice **linked list, trees, BST, string, queue, stack** from gfg
    - Revise CS subjects.
    - Puzzles: Gfg (1-85)
    - Communication skills are very important.
        - Try giving mock interviews to friends or seniors.
        - HR questions.

SUGGESTED RESOURCES

POTW link

- For implementation
    - A2oj ladders/ Rating filter on codeforces. (start from div2A, should be comfortable at least upto Div2C later)
    - Be comfortable with contests (codeforces/ atcoder/ leetcode). Leetcode contests are more relevant to placement preparation.

    - Hackerrank.
- For data structures/ algorithms
    - **Array**: leetcode
    - Math: leetcode
    - **String**: leetcode
    - **Greedy**: leetcode, gfg, POTW
    - Stack: gfg, leetcode
    - Queue: gfg, leetcode
    - **Binary search**: leetcode, POTW
    - **Sorting**: leetcode, algos from gfg(Insertion Sort, Bubble Sort, Selection Sort, Merge Sort, Quick Sort, Heap Sort)
    - **Priority queue (STL)**: Heap (Aditya Verma), leetcode
    - Sliding Window, 2 pointer: leetcode
    - Hashing: leetcode
    - LinkedList: gfg
    - Bit Manipulation: Hackerearth theory, leetcode
    - Backtracking + recursion: gfg, leetcode
    - Divide and Conquer: gfg, leetcode (focus on merge sort method)
    - **DP** (focus on recursion) (Aditya Verma from youtube)
        - Leetcode or InterviewBit + (**GFG 56 ques** on algorithm page)
        - Digit Dp (codeforces)
        - DP with Bitmask (after graph) (Codeforces and Kartik Arora Videos)
        - DP on trees (after graph) (GFG/Codeforces)
    - **Graph**
        - For theory: CP Algo, hackerearth, gfg (not good codes)
        - For practice: leetcode, InterviewBit, Codeforces, Hackerearth (not good solutions)
        - Also, do refer POTW (Problem of the week)
            - BFS
            - DFS
            - DSU (with Path compression)
            - Topological Sort
            - Strongly Connected Components
            - Bipartite
            - Cycle, coloring
            - LCA (from here) (Binary Lifting)
            - Shortest paths (Djisktra, Bellman Ford, Floyd Warshal, BFS)
            - Minimum Spanning Tree
            - Flood Fill Algorithm

                - Bridges articulation
                - Biconnected Components (optional, rarely asked)
                - Hamiltonian cycle + path (Dp with bitmasking)
                - Max flow Min flow (optional, rarely asked)
        - Binary Trees: gfg, InterviewBit
        - Binary Search Tree: gfg, InterviewBit
        - **Heap**: read operations from gfg, but implement using priority_queue
        - String Algos:
            - Refer POTW
                - KMP algorithm: CP Algorithms (most Important)
                - Z algorithm: Cp Algorithms (Rarely used)
                - Hashing: CP Algorithms (Rarely Used)
- Advanced DS: (asked rarely)
    - Trie (Hackerearth)
    - Segtree with Lazy Propagation (Hackerearth, CP Algo, POTW)
    - AVL Tree: gfg (asked a lot in mcq)
    - Red Black Tree : gfg
    - Fenwick Tree: hackerearth, CP algo, POTW
    - Suffix Tree
- CS Subject
    - OOPS (GFG or learncpp.com or Saurabh Shukla YT videos)(for java : javatpoint.com)
    - OS (Yellow pages, Gate Smashers)
    - DBMS (Gate smashers)
    - Networking (Gate Smashers)
- Alternative coding websites/hosting contests yourself
    - https://atcoder.jp/ is a good website having questions that are a hybrid of leetcode and Codeforces questions. You can't host your own contests here, but at https://kenkoooo.com/atcoder/#/table/ you can host a contest consisting of atcoder problems
    - Codeforces lets you host your own contest
    - https://binarysearch.com/ is full of Leetcode problems, you can host your own contest topic wise or company wise (Easy, Med, Hard problems are enough, Harder level problems are a bit over the top is what I found)

Placement Gyaaan: link
GFG Placement 100 Course: Here
Important Leetcode links: Here
some of the important algorithms yt link : link

CP algorithms is a good source for slightly complex algorithms which may come directly as a problem (eg. Josephus Problem (ye to karke hi jaana xD)) : https://cp-algorithms.com/

The more questions you solve on leetcode, the more are your chances in cracking a good company.
All the best!