Target 1

Learn the basics of C++. Topics include:

- Input/Output
- If Else Statements
- Variables
- Operators
- Loops
- Strings
- Arrays (Including sorting of arrays)
- Functions (Just how to make a function and call it)

You can learn these topics from Bucky's tutorials on YouTube or blogs such as https://www.w3schools.com/CPP/default.asp or https://www.cplusplus.com/doc/tutorial/. If you're already familiar with some other language, you can quickly go through these blogs to get accustomed to the syntax of C++.

If you're new to programming, practice 10-15 problems from this list: https://www.hackerrank.com/domains/algorithms?badge_type=problem-solving

Once you're familiar with these topics, go to https://a2oj.herokuapp.com/, enter your CodeForces handle (you will need to create an account on https://codeforces.com/) and **select 2A in the "By Divisions" part**. **Do the first 20-30 problems till you feel comfortable.**

Target 2

Read about time complexity and big O notation. You can watch this video too: https://youtu.be/Q_1M2JaijjQ

Read about STL (Standard Template Library): https://www.hackerearth.com/practice/notes/standard-template-library/

Read about Binary Search: https://www.topcoder.com/thrive/articles/Binary%20Search
Video about Binary Search:
https://www.youtube.com/watch?v=GU7DpgHINWQ&t=289s
Practice related problems on it. You can search for them on
https://www.copsiitbhu.co.in/resources/cp/potw/ or solve some problems from this list:
https://codeforces.com/problemset?order=BY_RATING_ASC&tags=binary+search%2C1500-1500

Go to the a2oj ladder (mentioned in Target 1), select the 2B ladder, and practice the first 40 problems.

Target 3

Complete the problems in the following lists (for STL):

- https://vjudge.net/contest/347490#overview
- https://vjudge.net/contest/348508#overview
- https://vjudge.net/contest/349264

Read about recursion:
https://www.topcoder.com/community/competitive-programming/tutorials/an-introduction-to-recursion-part-1/

Great video to understand recursion "intuitively":
https://youtu.be/0UM_J1jE1dg
Practice 5-6 problems from the following list:
https://www.hackerearth.com/practice/basic-programming/recursion/recursion-and-backtracking/tutorial/

Target 4

Sorting and Searching

Complete till sorting and searching, (Some problems may be very challenging on the first try, like Very Hard and Hard difficulty USACO problems, you may skip them on the first go, but keep thinking about it and return and solve them later.)
https://usaco.guide/silver

Binary Search

If you've practised basic binary search problems, you can try these (they are a bit more challenging):-
https://codeforces.com/problemset/problem/1117/C
https://codeforces.com/problemset/problem/1168/A
https://codeforces.com/problemset/problem/1251/D
https://codeforces.com/problemset/problem/448/D
https://www.codechef.com/SDPCB21/problems/SNAKEEAT

Dynamic Programming

DP Intro Video: (Try to watch and pause in between to think about the problems he asks in the middle and come up with your own solution.)
PART 1:
https://www.youtube.com/watch?v=YBSt1jYwVfU&t=11s
PART 2:
https://www.youtube.com/watch?v=1mtvm2ubHCY
PART 3:
https://www.youtube.com/watch?v=pwpOC1dph6U

Solve at least up to J (of course you can solve more if you want :))
https://atcoder.jp/contests/dp/tasks
For further practice:
https://codeforces.com/contestInvitation/dbdc3d98d7378b34a4a47114864882815a7669e9

Target 5

Graph Theory: DFS, BFS, DSU, MST, Shortest Paths

Theory:
DFS, BFS, MST, Shortest Paths:
https://www.hackerearth.com/practice/algorithms/graphs/graph-representation/tutorial/
DSU: https://cp-algorithms.com/data_structures/disjoint_set_union.html

Practice:
Solve appropriate sections from
https://www.codechef.com/certification/data-structures-and-algorithms/prepare#advanced
Solve till “Investigation” from the “Graph Algorithms” part (some of the later ones have more advanced topics, but you can still try them if you want): https://cses.fi/problemset/

USACO Silver

Complete the graphs part from this section: https://usaco.guide/silver

Target 6

Segment Trees

Segment tree from edu section in CF (both part 1 and part 2):
https://codeforces.com/edu/course/2
Range queries from CSES: https://cses.fi/problemset/list

Can also explore the following links:
https://codeforces.com/blog/entry/22616
https://usaco.guide/gold/PURS