A simple plan of learning algorithm data structure for beginner competitive programmers.

Nowadays I see many questions about how to learn algorithm data structure serialy. So I made this plan for those beginners who are suffering from the need of guidelines.

This list is serialized in the way I learned the topics below, when I was a beginner. But this is not surly the right way. So don't follow this plan if you have other plans. And you have to increase your problem solving skills side by side learning these topics. Otherwise you won't be able to understand most of them. And solve problems from uva and lightoj after learning a new topic. And also solve from codeforces because uva lighthoj problems are classical and codeforces problems are too tricky. You can follow a2oj ladders or problem rating of codeforces for regular practice. You also have to participate in regular codeforces rounds and have to upsolve them.

Note :
I have added a link of blogs from where I have learned those topics. You can follow that blog or any other source you want.
The topics of dynamic programming is reserialled in shafates planet. You may better follow that way.

1. Complexity analysis
2. Recursion and basic dynamic programming
    - Link1
    - Link2
3. Standard template library
4. Binary search
    - Upper bound
    - Lower bound
    - Bisection
5. Sieve of Eratosthens
    - Link1
    - Link2
6. Bit wise sieve
7. Prime factorization
8. Number of divisors & Sum of divisors
9. Divisor summatory function

10. Euler phi function
11. Extended Euclidean
12. Linear diophantine equation
13. Modular arithmetic
14. Introduction to graph theory
15. Different representation of graph
    - Adjacency matrix
    - Adjacency List
16. Depth first search (Competitive programming : 3 book)
17. Breadth first search (Competitive programming : 3 book)
18. Finding Connected components (Competitive programming : 3 book)
19. Flood fill (Competitive programming : 3 book)
20. Topological sort (Competitive programming : 3 book)
21. Bipartite graph check (Competitive programming : 3 book)
22. Graph Edges property check (Competitive programming : 3 book)
23. Minimum spanning tree (Competitive programming : 3 book)
24. 0-1 Knapsack & Coin change
25. Longest Common subsequence
26. Longest increasing subsequence
    - Dynamic Programming Solution
    - Binary search solution
27. Bitmask dp
28. Minimum vertex cover
29. Dijkstra (Competitive programming : 3 book)
30. Floyd Warshall's dp solution (Competitive programming : 3 book)
31. Segment tree
32. Lazy propagation
33. Bineary Indexed tree
34. Trie
35. Bellman ford
36. Digit dp
37. More about segmentree
38. Hashing
39. Z - algorithm (No need to learn just use the code)
40. Manchers algorithm
41. Kmp (No need if you can use Z - algorithm)